SHARP SERVICE MANUAL

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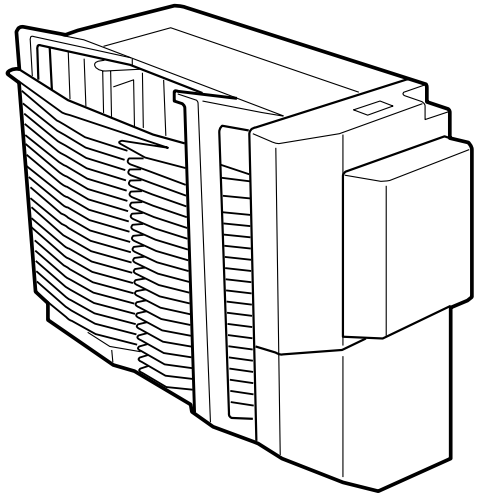

20-BIN STAPLE SORTER

MODEL AR-SS2

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■ PARTS GUIDE

Parts marked with "⚠" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

SHARP CORPORATION

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The contents are subject to change without notice.

[1] SPECIFICATIONS

Type
20-bin staple sorter (copier-mounted, hook type)

No. of bins
20 bins (incl. non-sort bin)

Loading method
Face up
Bin-shift, open-port system

Kinds of copy paper
With normal paper (64 to 105g/m^2) or thick paper (106 to 200g/m^2), max. 2 sheets of covers, back covers, or insert papers can be sorted.
Special paper, 2nd original paper, OHP, postcards, labels

Capacity of each bin: 105g/m^2 or equivalent

Non-sort mode (1-bin only):	100 sheets (A4, A4R, B5, B5R, A5, 8.5"x11", 8.5"x11"R, 5.5"x8.5", 7.25"x10.25"R) 60 sheets (A3, B4, 11"x17", 8.5"x14", 8.5"x13", 12"x18")
Sort mode:	50 sheets (A4, A4R, B5, B5R, A5, 8.5"x11", 8.5"x11"R, 5.5"x8.5") 25 sheets (A3, B4, 11"x17", 8.5"x14", 8.5"x13")
Staple sort mode:	30 sheets (A4, A4R, B5, 8.5"x11", 8.5"x11"R) 25 sheets (A3, B4, 11"x17", 8.5"x14", 8.5"x13")
Group mode:	30 sheets (A4, B5, A5, 8.5"x11", 5.5"x8.5", A4R, B5R, 8.5"x11"R) 25 sheets (A3, B4, 11"x17", 8.5"x14", 8.5"x13")

Bin returning time (from 20 bin to 1 bin)
About 10 sec

Limitless function
Not provided

Bin specifying function
Not provided

Operation panel
Staple key

Display section
Manual staple: Enable/disable (Enable when LED is ON)
Staple supply indication

Stapling system
Punching by the rotation cam

Auto stapling enable copy paper size
A3, A4, B4, B5, A4R, 11"x17", 8.5"x14", 8.5"x11", 8.5"x11"R, 8.5"x13"

Manual stapling enable copy paper size (Stapling by key operation immediately after copying)
A3, A4, B4, B5, A4R, 11"x17", 8.5"x14", 8.5"x11", 8.5"x11"R, 8.5"x13"

Manual feed stapling enable copy paper size (Stapling by paper insertion by the user)
All sizes

Number of sheets to be staped (64 to 105g/m^2 or equivalent)

Auto stapling:	30 sheets: A4, A4R, B5, 8.5"x11", 8.5"x11"R (28 sheets of 105g/m^2 + 2 sheets of 200g/m^2 or max. thickness 5.5mm) 25 sheets: A3, B4, 11"x17", 8.5"x14", 8.5"x13" (28 sheets of 105g/m^2 + 2 sheets of 200g/m^2 or max. thickness 5.5mm)
Manual stapling:	30 sheets: A4, A4R, B5, 8.5"x11", 8.5"x11"R (28 sheets of 105g/m^2 + 2sheets of 200g/m^2 or max. thickness 5.5mm) 25 sheets: A3, B4, 11"x17", 8.5"x14", 8.5"x13" (28 sheets of 105g/m^2 + 2sheets of 200g/m^2 or max. thickness 5.5mm)
Manual feed stapling:	30 sheets: All sizes

Applicable staple
Staple: SF-SC11 (Cartridge: 5,000 staples)

Staple empty detection
Available (The staple empty display is lighted when the remaining quantity of staples is 40 pcs or less after stapling.)

Auto staple positioning
Available (Auto staple positioning is started when the stapler unit cover is closed after staples are supplied.)

Use environment
Temperature: Conforms to the conditions for the copier.
Humidity: Conforms to the conditions for the copier.

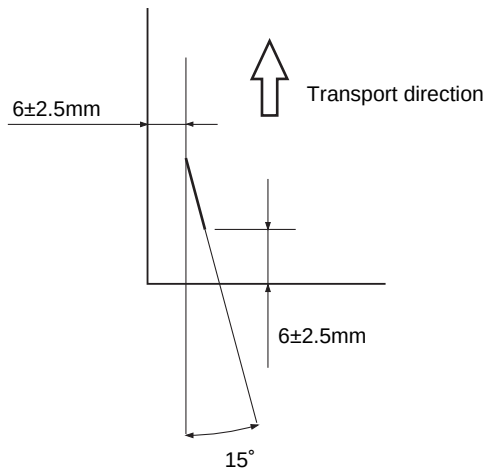
Power source
24V (Supplied from the copier)

Max. power consumption
About 60W

Weight
About 26.4kg

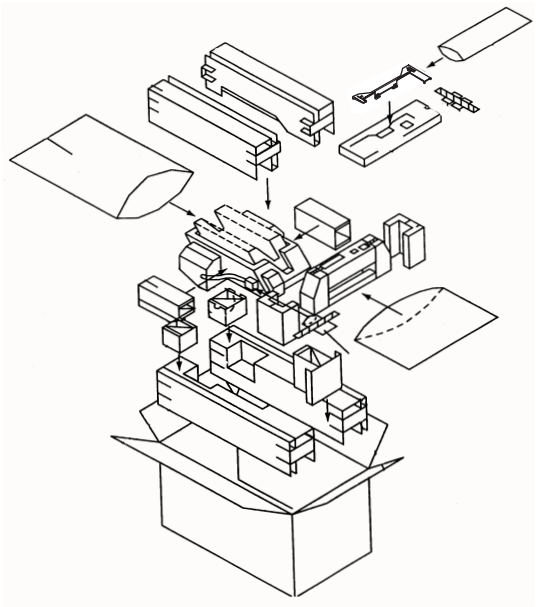
Dimensions (Width x Depth x Height)
417 x 594 x 624 mm

Staple position

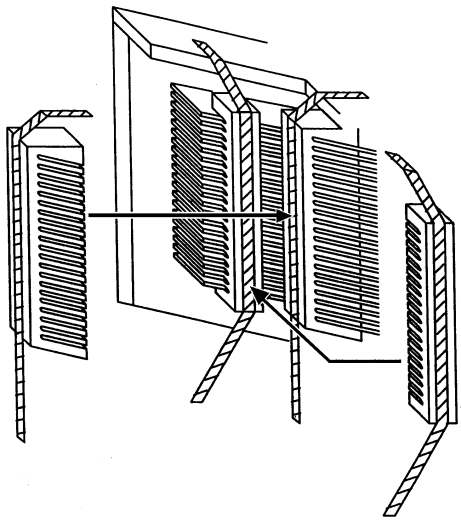


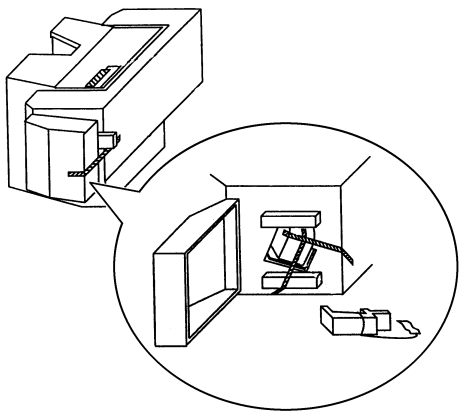
[2] UNPACKING AND INSTALLATION

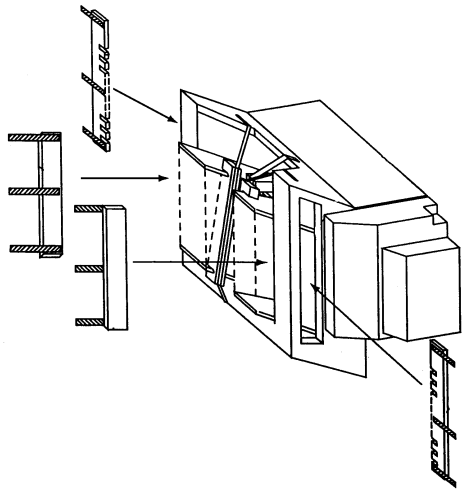
1. Unpacking

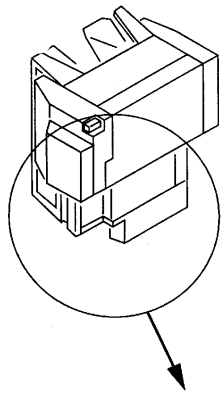


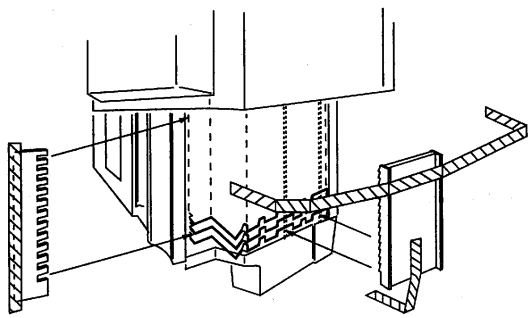
Remove the filament tape and remove the packing of each section.

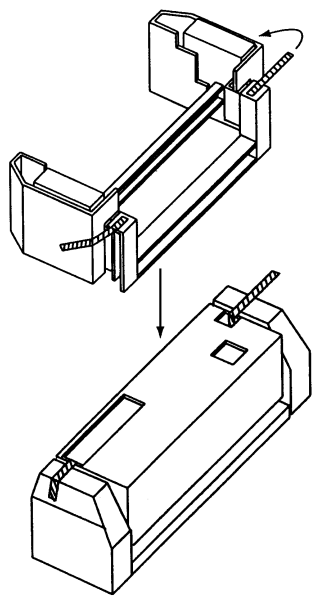




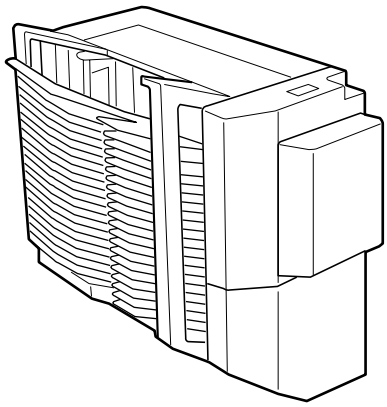






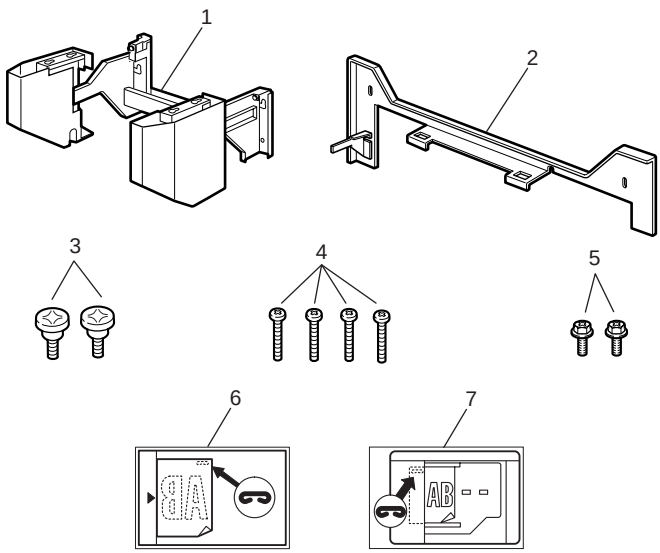


2. Installation



Packed items

1	Rail unit	1
2	Lock plate	1
3	Rail unit fixing screw	2
4	Mounting kit fixing screw (M4 x 18)	4
5	Sorter fixing screw (M4 x 10)	2
6	Stapler position label A (for the copier)	1
7	Stapler position label D (for the RADF)	1



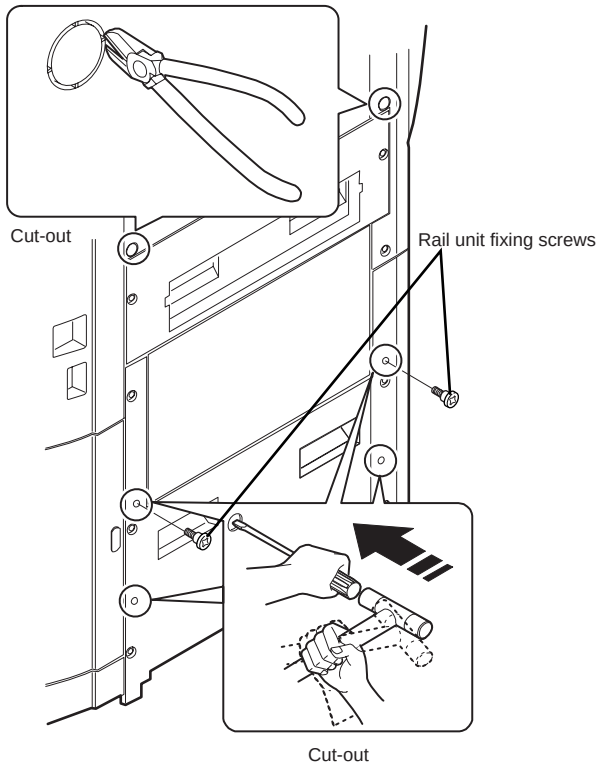
Pull out the power plug of the copier from the power outlet, and follow the procedures below.

Setting of the copier and the stapler sorter

1. Remove the notch sections of the copier, and install the rail mounting plate fixing screw.

Use nippers to cut out the two cut-out sections on the upper side of the left cabinet of the copier. Use a screwdriver to punch out the four cut-out sections on the lower side. (There are 6 cut-out section in total.)

2. Fix the rail unit fixing screw temporarily as shown in the figure.

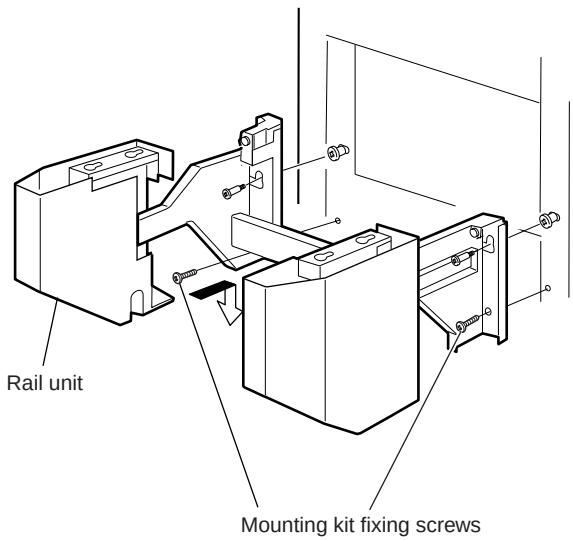


3. Install the rail unit

Hang the rail unit on the upper rail unit fixing screws which were fixed temporarily in procedure 2.

Tighten the mounting kit fixing screw in the position shown in the figure.

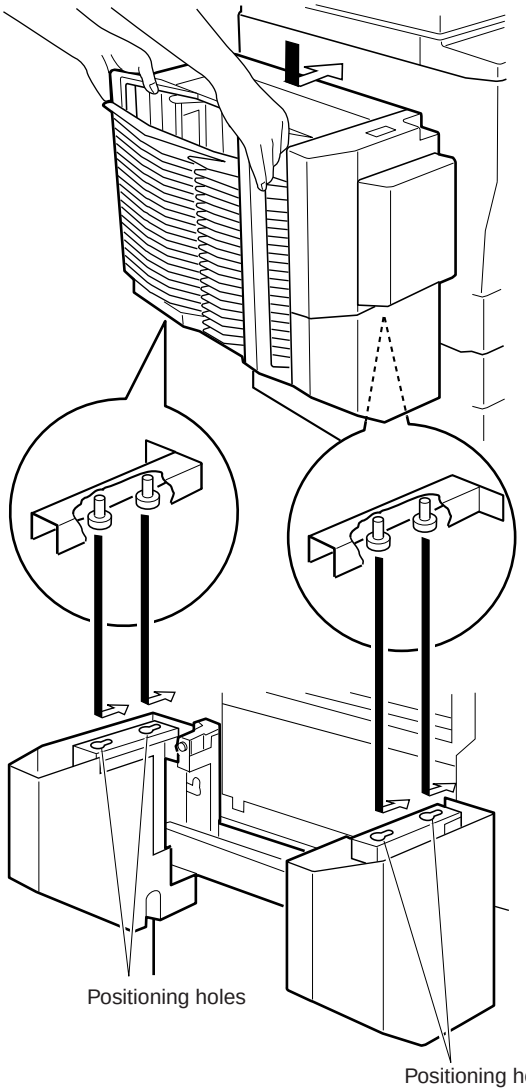
Tighten the upper rail unit fixing screws which were temporarily fixed.



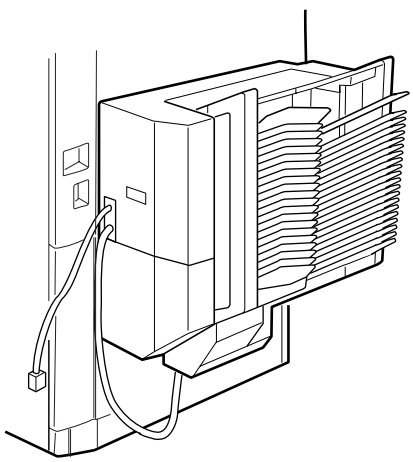
4. Fix the sorter to the rail unit.

[Note] When lifting the sorter, hold the sorter as shown in the figure so as not to make contact with the sorter bin.

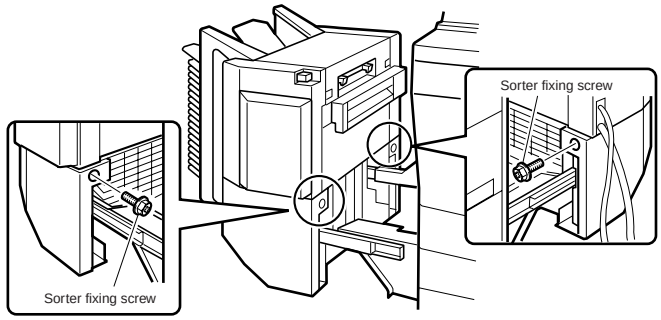
Insert the positioning screws on the lower side of the sorter into the rail unit positioning holes, and slide the sorter inward.



At that time, position the wiring of the sorter as shown in the figure.

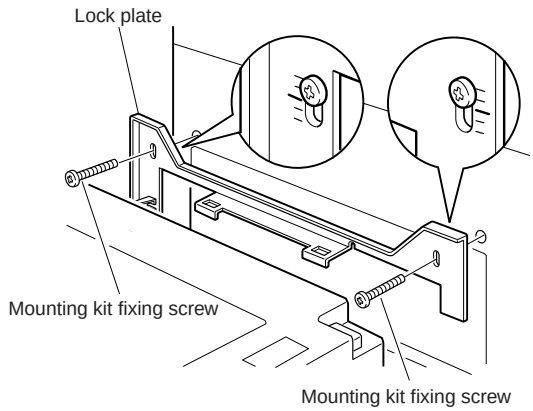


Fix the sorter unit with the sorter fixing screws on the front and the rear sides of the rail unit.



5. Install the lock plate and check that the staple sorter is installed.

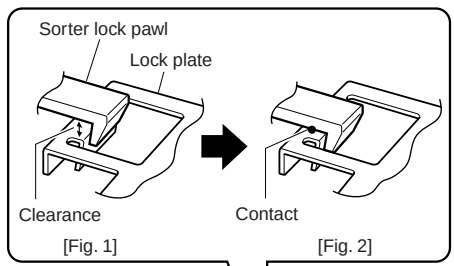
1) Fix the lock plate with two mounting kit fixing screws (M4 x 18 S tight) with the sorter mounting plate lowered as shown in the figure.

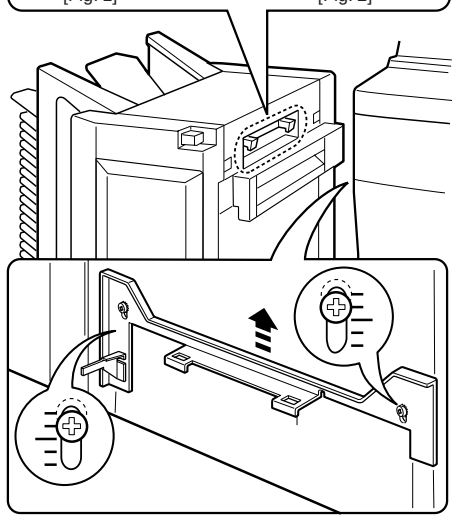


2) Lock the staple sorter to the copier body, and check the clearance between the sorter lock pawl and the lock plate. (Refer to Fig. 1)

3) Loosen two mounting kit fixing screws so that the sorter lock pawl and the lock plate are in contact horizontally. Adjust the lock plate height. One scale corresponds to about 2mm. (Refer to Fig. 2)

   At that time, check that the paper exit cabinet of the copier can be opened and closed.

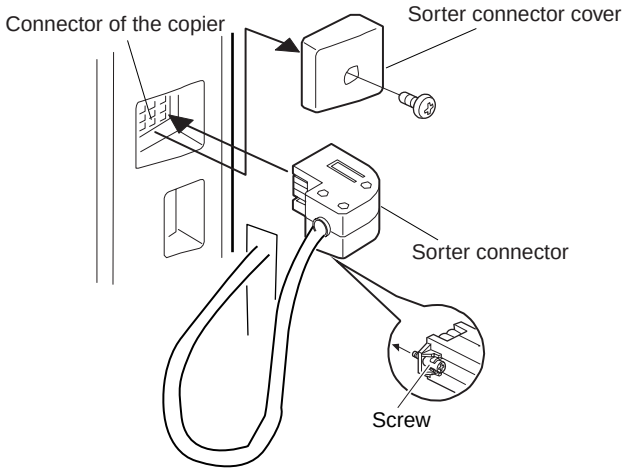




6. Connect the sorter connector.

Remove the sorter connector cover attached to the rear cabinet of the copier.

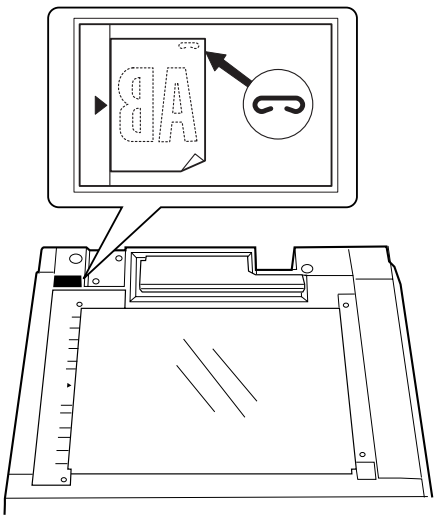
Connect the sorter connector to the connector of the copier and tighten the screw to fix the connector.



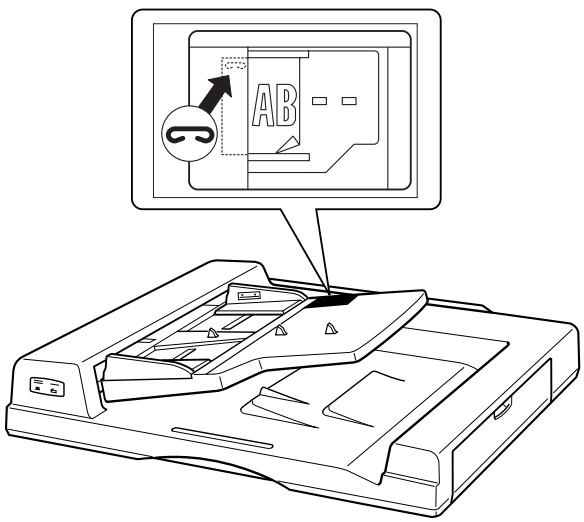
7. Attach the staple position label.

- Attach the staple position label as shown below.

Staple position label A (for the copier)



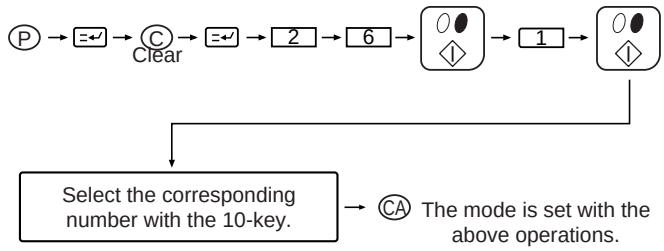
Staple position label D (for the RADF)



Insert the power plug of the copier into the power outlet, turn on the power switch, and follow the procedures below.

8. Set the mode.

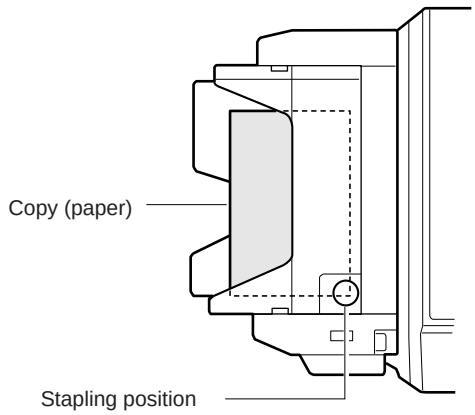
- Set the mode with the key operation of the copier.



9. Check the operation of the staple sorter.

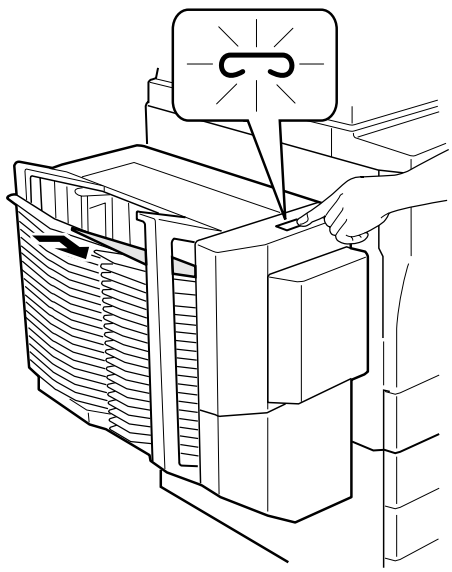
Align the paper to be stapled.

- The max. stapling capacity is 30 sheets. If the max. capacity is exceeded, a malfunction may occur.



Set paper in the top bin, check the stapling position, and insert the paper until it makes contact with the bin edge.

When the display lamp of the staple key is lighted, press the staple key.



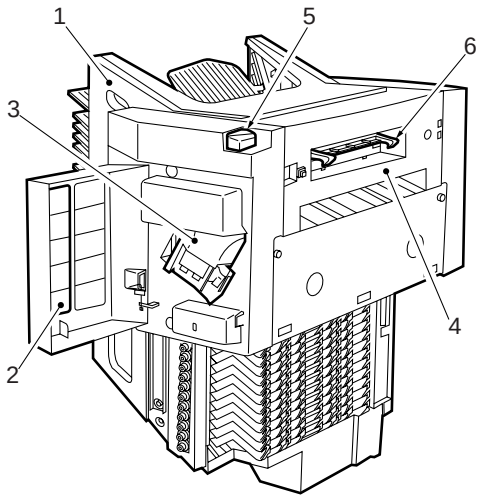
Remove the paper in the top bin, and check that stapling is made properly.

If stapling is not made, repeat the above procedures.

With the above procedures, installation of the staple sorter is completed.

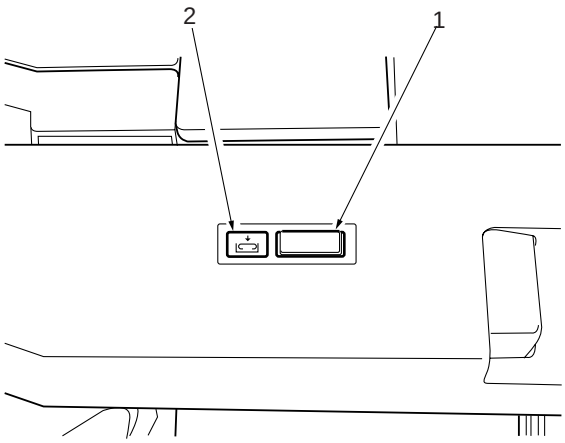
[3] EXTERNAL VIEW AND INTERNAL STRUCTURE

1. External parts



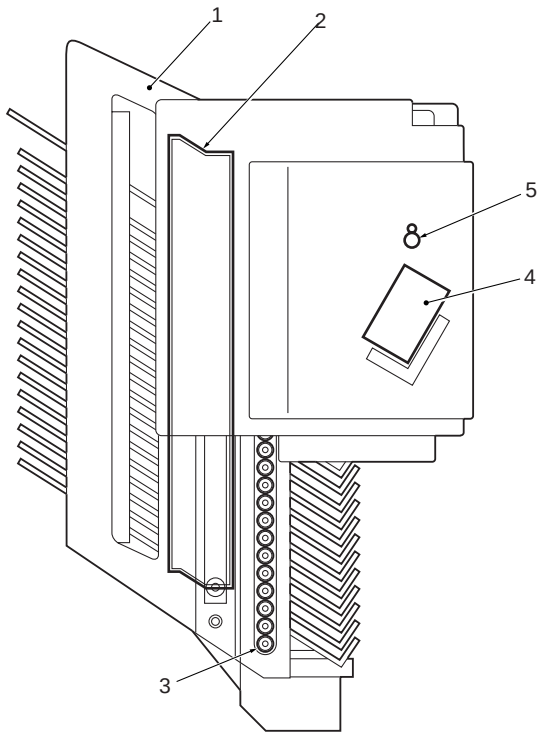
No.	Name
1	Bin unit
2	Stapler unit cover
3	Stapler unit
4	Transport guide unit
5	Latch lever
6	Latch

2. Operation panel



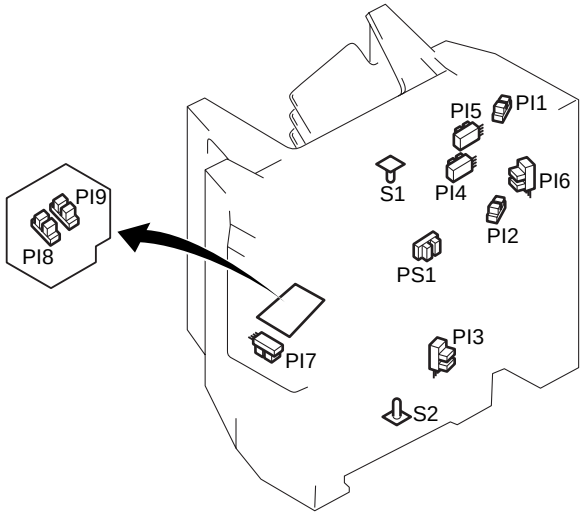
No.	Key name	Function	Remarkl
1	Staple key	• Press to start manual stapling or manual paper feed stapling. • When pressed during stapling, the operation is stopped. • Blinks when a staple jam occurs.	During manual paper feed stapling, interruption cannot be made.
2	Staple supply display	Lights up when staplers are exhausted.	When the number of remaining staplers is 40 pcs or less.

3. Cross section



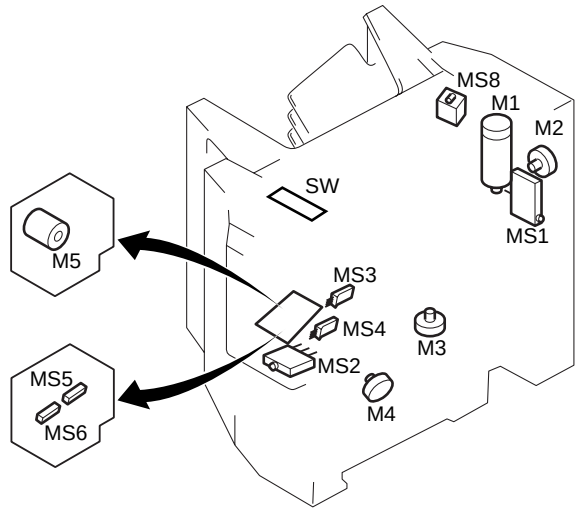
No.	Name
1	Bin unit
2	Guide bar
3	Roller
4	Stapler unit
5	Transport roller

4. Sensors



Symbol	Name	Code	Function
	Sensor in bin (Light emitting)	S1	Detects paper in the bin (Light emitting)
	Sensor in bin (Light receiving)	S2	Detects paper in the bin (Light receiving)
	Bin unit shift motor clock sensor	PI1	Detects clock signals from the bin shift motor.
	Lead cam home position sensor	PI2	Detects the lead cam in the home position.
	Guide bar home position sensor	PI3	Detects the guide bar in the home position.
	Bin unit upper limit sensor	PI4	Detects the bin unit at the upper limit.
	Bin unit lower limit sensor	PI5	Detects the bin unit at the lower limit.
	Joint sensor	PI6	Detects the joint.
	Stapler unit cover sensor	PI7	Detects opening of the stapler cover.
	Staple home position sensor	PI8	Detects stapling in the home position.
	Staple ready sensor	PI9	Detects the first staple at the operation position.
	Paper exit sensor	PS1	Detects paper exit.

5. Motors, switches, solenoids and PCBs



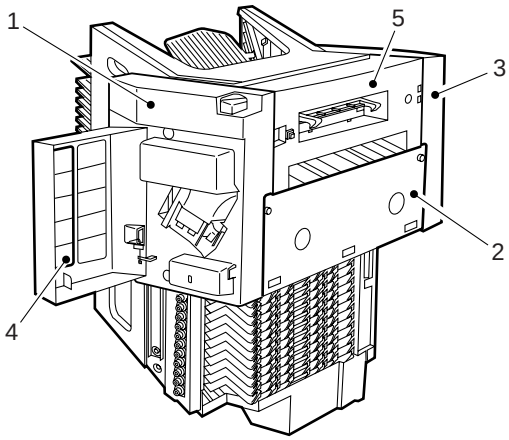
Symbol	Name	Code	Function
M	Bin unit shift motor	M1	Shifts the bin.
	Paper feed motor	M2	Feeds paper.
	Guide bar drive motor	M3	Drives the guide bar.
	Stapler unit oscillation motor	M4	Drives the stapler unit.
	Stapler motor	M5	Drives the stapler.
	Joint switch	MS1	Detects the joint.
	Stapler unit cover switch	MS2	Detects opening of the stapler cover.
	Stapler safety detection switch	MS3	Detects staplers under the safety state.
	Stapler unit oscillation home position sensor	MS4	Detects the stapler unit in the oscillation home position.
	No staple detection switch	MS5	Detects stapler empty.
	Cartridge detection switch	MS6	Detects the stapler cartridge.
	Obstacle detection switch	MS8	Detects an obstacle.
	Manual staple switch	SW	Manual stapling operation
		1	Control panel PWB
		2	Sorter controller PWB

[4] DISASSEMBLY AND ASSEMBLY

1. External fitting

To clean, check, or repair the machine, remove the cover of the desired section in the following procedures.

For the covers that can be removed simply by removing the fixing screws, the procedures are omitted.



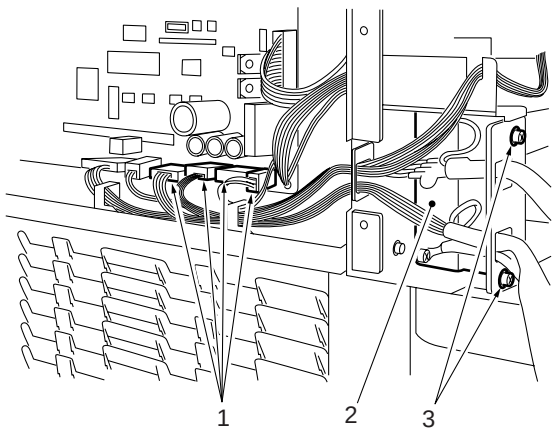
1 Front cover (2)
2 Right cover (2)
3 Rear cover (2)
4 Stapler unit cover
5 Transport guide unit

Note When removing the front cover, be careful not to break the connector that is at the back of the operation panel.

2. Bin unit

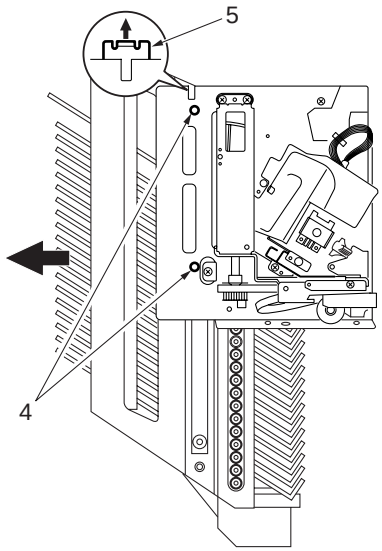
A. Bin unit removal

1) Remove the front cover, the right cover, and the rear cover.
2) Remove the four connectors (1) of the sorter controller PWB.
3) Remove the two screws (3) of the signal code plate (2), and remove it.

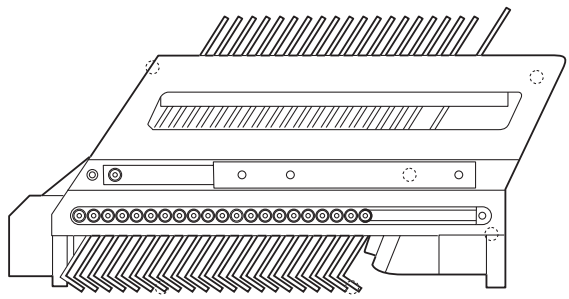


4) Remove the two screws (4) on the front side and the two on the rear side.
5) Lift the projection (5) of the accuride rail and remove the bin unit in the arrow direction.

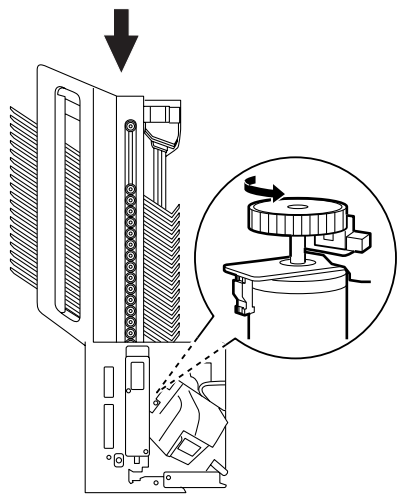
Note: Bin unit weight: About 10kg



6) Set down the removed bin unit as shown below.



Note: When assembling the bin unit, place the bin unit on the lead cam from the upper side of the sorter body, rotate the clock disc of the shift motor to engage the lead cam with the bin.

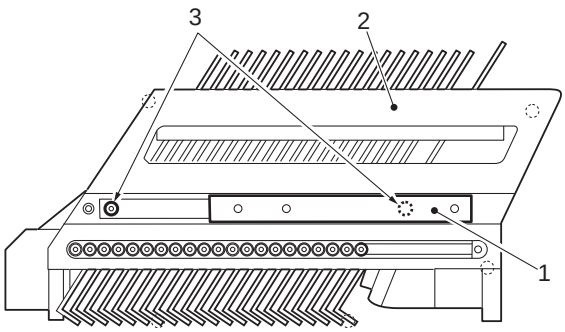


B. Bin removal

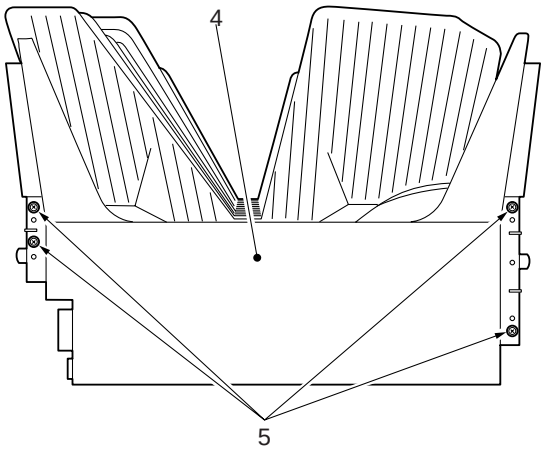
When removing the bin of this machine, remove the bin roller. If, however, it is removed twice or more, the strength will be decreased and it must be replaced. For replacement of first bin to 13th bin, replace from the top. For replacement of the lower bins, replace from the bottom.

1. Replacement of bins from the top

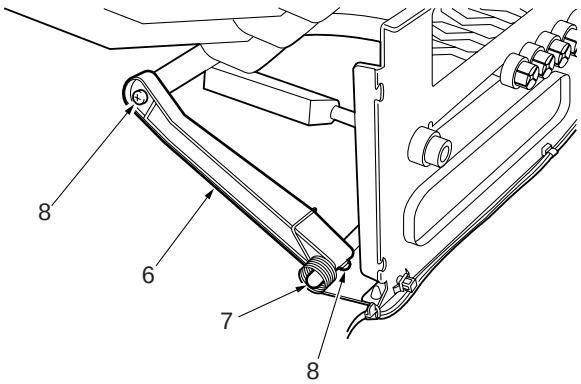
1) Remove the bin unit from the sorter and lay it on a work table.
2) Remove the two screws (2) and remove the accuride rail (1).
3) Remove the three screws on the front and the four screws on the rear, and remove the bin front cover (3).



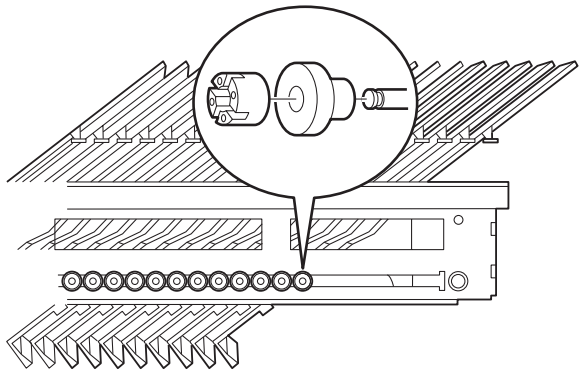
4) Remove the four screws (5) and remove the bin upper cover (4).



5) Remove the spring (7) and the screw (8), and then remove the guide bar holder (5).

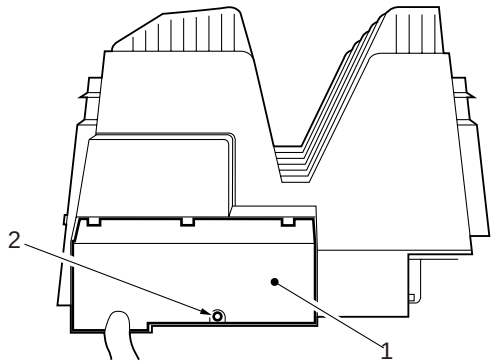


6) Remove the bin roller stopper (9) and the bin roller (10), and remove the bin.

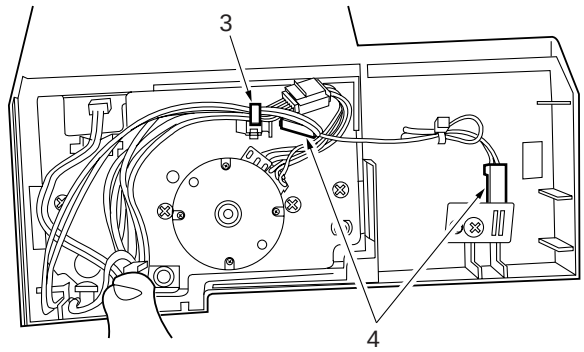


2. Replacement of bins from the bottom

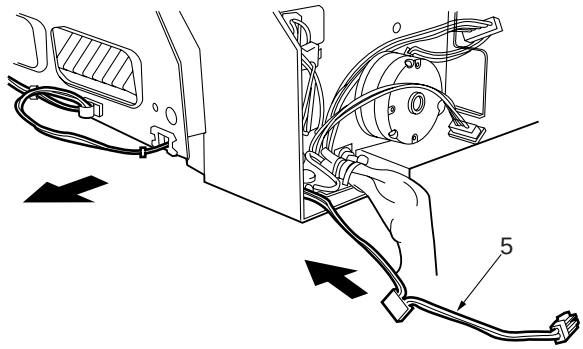
1) Remove the screw (2) of the bin lower unit cover (1), and then remove the bin lower unit cover.



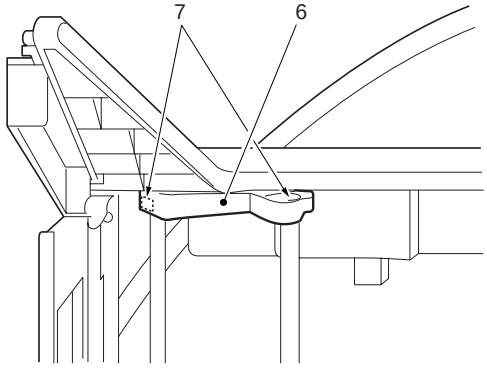
2) Remove the tie lap (3) and two connectors (4).



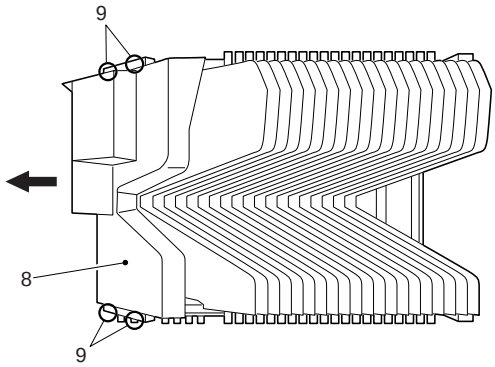
3) Pull out the sensor wiring (5) in the arrow direction.



4) Remove the two screws (7) of the guide bar holder (6).



5) Remove the four screws (9) and remove the bin lower unit (8). When removing, separate the guide bar holder from the guide bar.

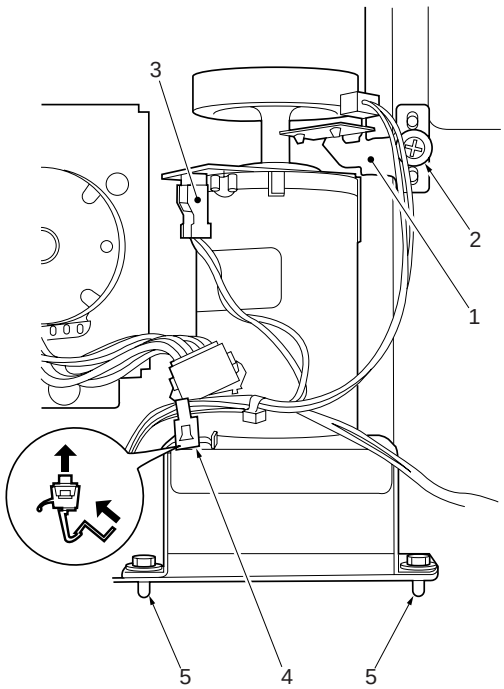


6) Remove the bin roller stopper and the bin roller, and remove the bin.

Note: When assembling the bins, check the bin roller stopper lock section. If it is broken, replace it. After assembling the bin unit, check that all bin roller stoppers are in position.

C. Bin shift motor (M1) removal

1) Remove the rear cover.
2) Remove the screw (2) of the transport motor clock sensor mounting plate, and then remove the transport motor clock sensor mounting plate (1).
3) Remove the connector (3), and pull out the tie lap(4) from the hole in the plate.
4) Remove the two screws (5), and remove the bin shift motor.



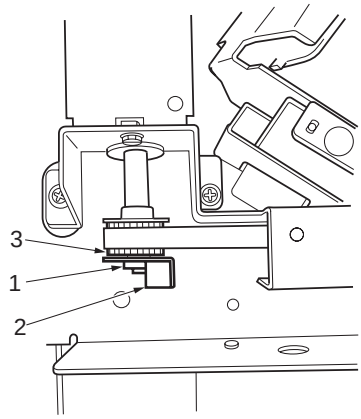
D. Lead cam

1. Lead cam removal

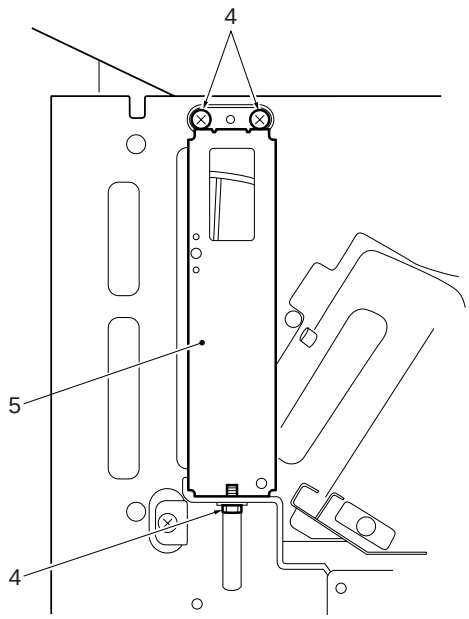
1) Turn on the power of the copier. Press SW2 on the sorter controller PWB to move the bin unit to the bottom.

Note: If two lead cams on the front and the rear sides are pressed simultaneously, the bin unit falls suddenly. To prevent against this, be sure to press them one at a time.

2) Remove the E-ring (1), the sensor flag (2), and the gear (3).

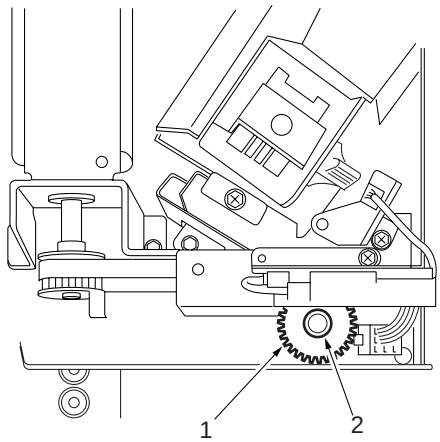


3) Remove the three screws (4), and remove the lead cam unit (5).

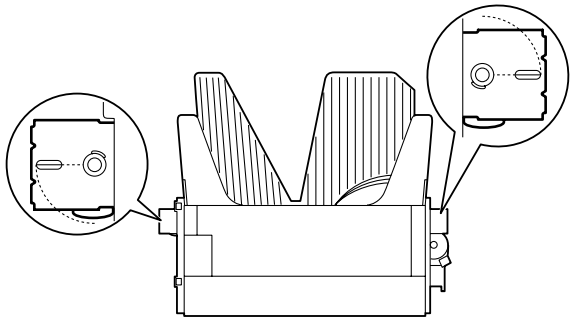


2. Lead cam position adjustment

1) Remove the E-ring (2) of the lead cam drive gear (1) on the front side.

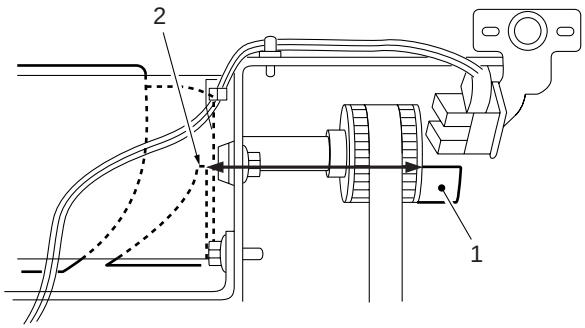


2) Adjust engagement of the lead cam drive gear (1) so that the upper blade tips of the lead cams on the front and the rear sides are as shown in the figure below.



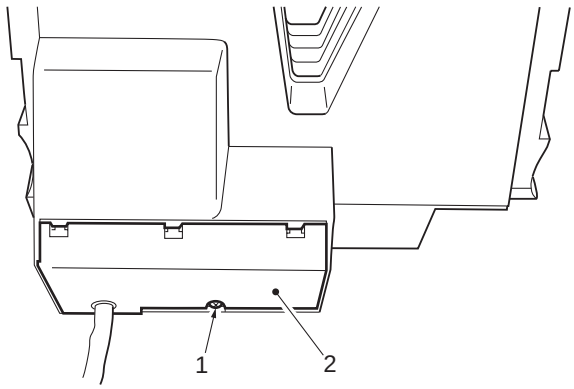
3) Attach the E-ring.

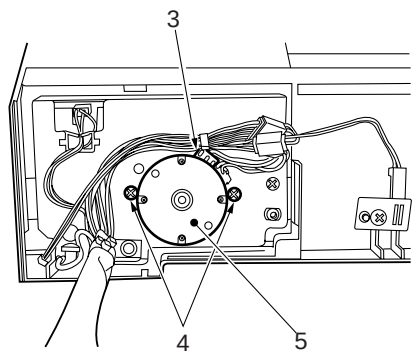
Note: When assembling the flag (1) for the lead cam home position sensor, fit the teeth tips (2) of the lead cam with the phase of the flag (1) as shown below.



E. Guide bar motor (M3) removal

1) Lift the bin unit to the top for easiness of work.
2) Remove the screw (1) and remove the bin lower unit cover (2).
3) Remove the connector (3) and two screws (4), and then remove the guide bar motor (5).

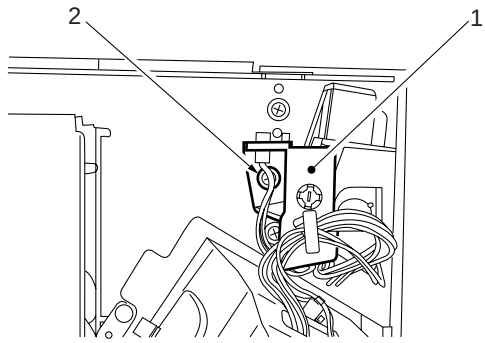




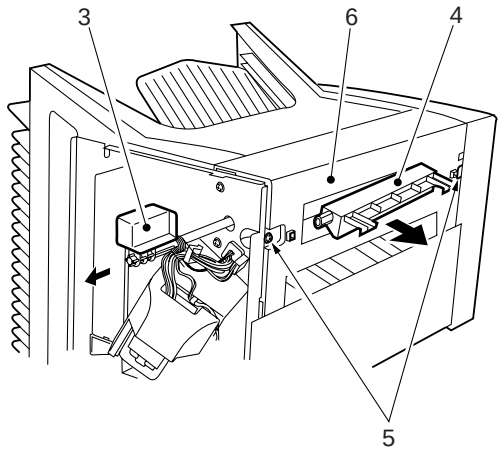
3. Transport duide

A. Transport guide unit removal

1) Remove the front cover.
2) Remove the screw (2) and the latch lever holder (1).

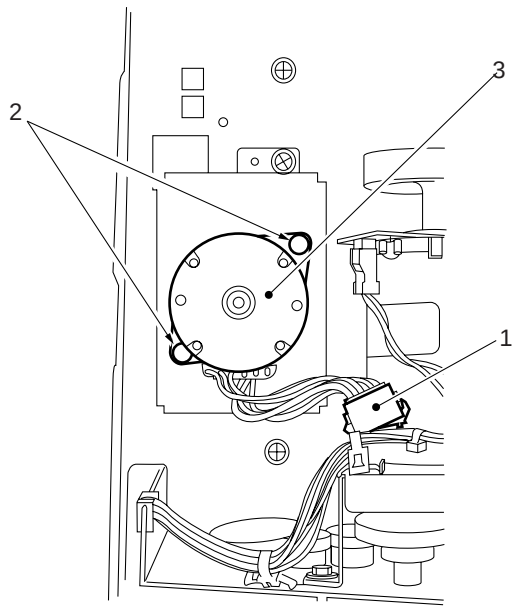


3) Remove the latch lever (3) and the latch (4).
4) Remove the screw (5), and remove the transport guide unit (6).



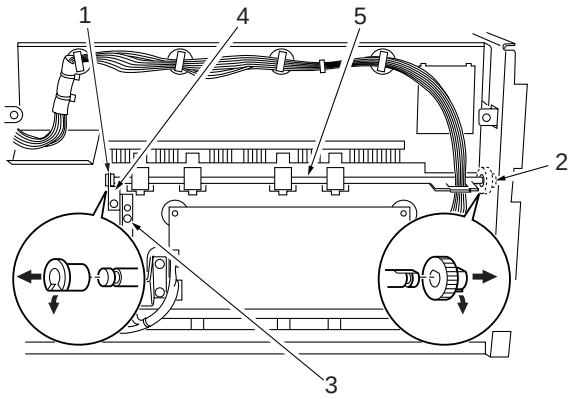
B. Transport motor (M2) removal

1) Remove the rear cover.
2) Remove the connector (1) and two screws (2), and then remove the transport motor (3).



C. Transport roller removal

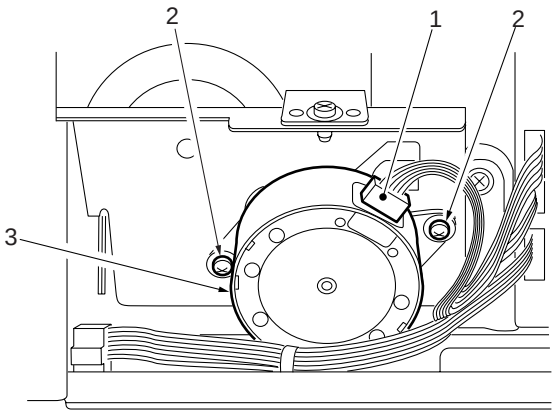
1) Remove the right cover, the front cover, the transport guide unit, the rear cover, and the transport motor.
2) Remove the transport roller bushing (1) and the gear (2).
3) Remove the screw (3), and remove the transport roller attachment fixture (4).
4) Remove the transport roller (5).



4. Stapler oscillation unit

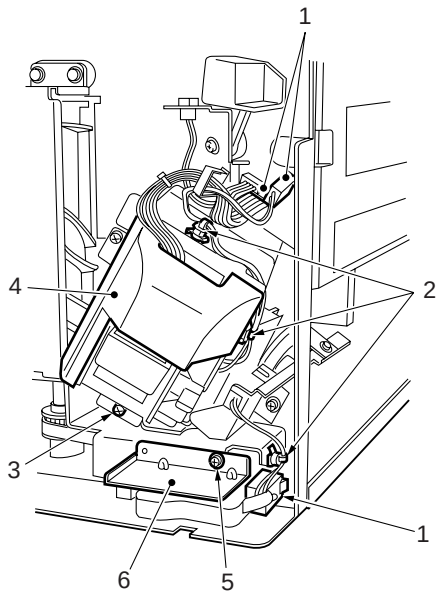
A. Stapler unit oscillation motor (M4) removal

1) Remove the right cover.
2) Remove the connector (1) and two screws (2), and remove the stapler unit oscillation motor (3).

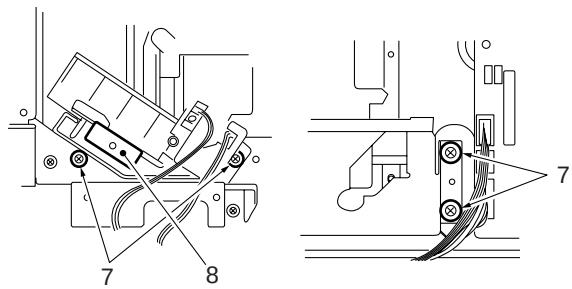


B. Stapler oscillation unit removal

1) Remove the right cover, the stapler unit oscillation motor, and the front cover.
2) Remove the three connectors (1) and three tie laps (2).
3) Remove the screw (3), and remove the stapler unit (4).
4) Remove the screw (5), and remove the stapler cover switch unit (6).



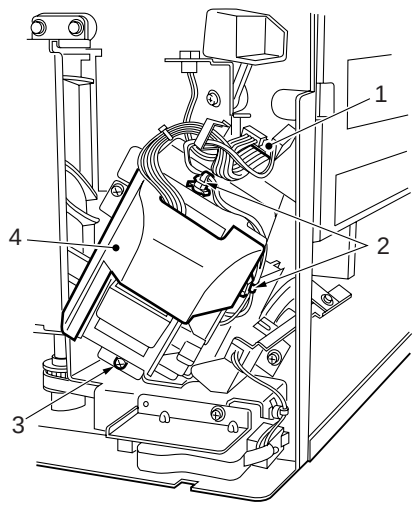
5) Remove the four screws (7), and remove the stapler oscillation unit (8) toward you.



5. Stapler unit

A. Stapler unit removal

1) Remove the front cover.
2) Remove the connector (1) and two tie laps (2).
3) Remove the screw (3), and remove the stapler unit (4).



[5] ADJUSTMENTS

1. Electrical system

A. Process for major parts replacement

Major parts	Process
• Sorter controller PWB	1) Bin paper sensor sensitivity adjustment 2) Guide bar motor oscillation range adjustment 3) Stapler oscillation motor oscillation range adjustment (Staple position adjustment)
• Bin paper sensor (S1, 2)	1) Bin paper sensor sensitivity adjustment
• Guide bar home position sensor (PI3)	1) Guide bar motor oscillation range adjustment
• Guide bar oscillation motor (M3)	1) Guide bar motor oscillation range adjustment
• Stapler oscillation motor (M4)	1) Stapler oscillation motor oscillation range adjustment (Staple position adjustment)

B. Bin paper sensor sensitivity adjustment

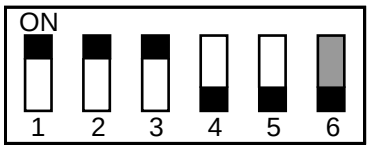
This adjustment must be performed when replacing the following parts:

- Sorter controller PWB
- Bin paper sensor (S1, S2)

Note: To perform this adjustment, the bin unit must be assembled completely in advance. If the adjustment is performed without assembling the cover, etc., the sensor will receive external lights, resulting in an error in adjustment.

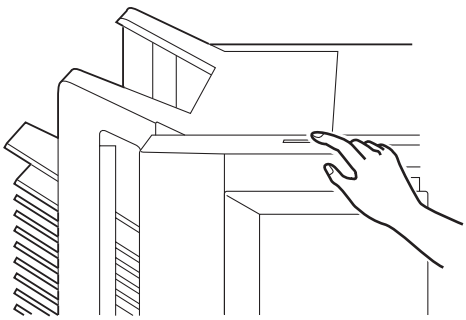
<Operating procedure>

1) Remove all the paper in the bins.
2) Remove the right cover, and set the DIP switch on the sorter controller PWB as shown below.



∗ Do not move No. 6, which is used only for selection of the communication system with the copier.

3) Press the manual staple key on the operation section of the machine.



4) Check the status of the manual staple key on the operation section of the machine.

   ON: Adjustment completed.

   Blinking: Adjustment error

   In case of an adjustment error, the error code of F1-91 is displayed on the copier.

5) When the manual staple key blinks, turn off and on the copier power switch, check the status of the bin paper sensor (on the light emitting side and the light receiving side) corresponding to the error code, and perform the adjustment from procedure 1) again.
6) After completion of the adjustment, return the DIP switch on the sorter controller PWB to the original state.

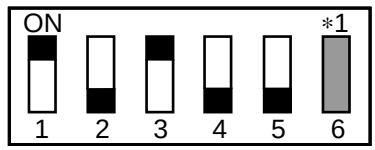
C. Guide bar oscillation range adjustment

This adjustment is performed when the following parts are replaced.

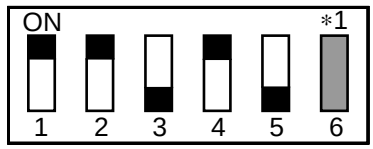
- Sorter controller PWB
- Guide bar home position sensor (PI3)
- Guide bar oscillation motor (M3)

<Operating procedure>

1) Prepare one sheet of A4 or letter paper for copying.
2) Remove all the paper from the bins.
3) Remove the right cover, and set the DIP switch (SW1) on the sorter controller PWB as shown below. (Note that the setup content differs depending on the copy paper size.)

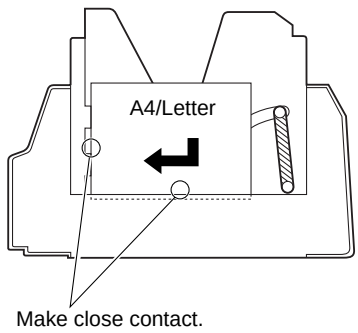


(When A4 copy paper is used)



(When letter copy paper is used)

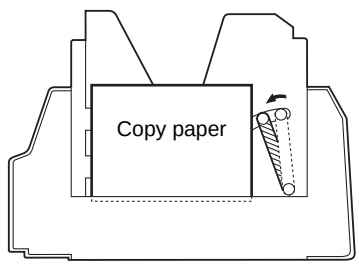
4) Place A4 or letter copy paper in the bin as shown below.



5) Operate the bin shift key (SW2, SW3) on the sorter controller PWB to bring the guide bar into a slight contact with the copy paper.

   UP key (SW3): Moves the guide bar to the paper.

   DOWN key (SW2): Moves the guide bar apart from the copy paper.



6) Under the state of procedure 4), press the manual staple key on the operation section of the machine. The guide bar returns to the home position and the adjustment value is stored.

7) Check the status of the manual staple key.
   ON: Adjustment completion
   Blinking: Adjustment error
8) When the manual staple key blinks, check the installing condition of the guide bar home position sensor, and perform the adjustment from procedure 4) again.
9) After completion of the adjustment, return the DIP switch (SW1) on the sorter controller PWB to the original state.

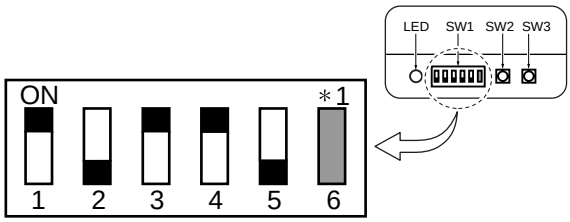
D. Stapler unit oscillation position adjustment (Staple position adjustment)

This adjustment is performed when the following parts are replaced.

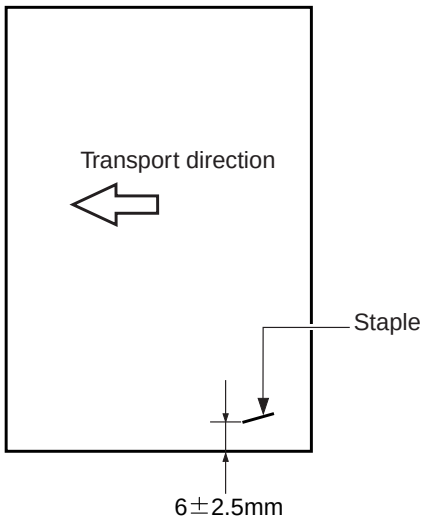
- Sorter controller PWB
- Stapler unit oscillation motor
- Stapler oscillation unit

<Operating procedure>

1) Remove all the paper from the bins. Remove the right cover.
2) Set the DIP switch (SW1) on the sorter controller PWB as shown below.



3) Place 5 sheets of A4 or letter paper in the first bin as shown below.
4) Press the push switch (SW3) on the sorter controller PWB to shift the stapler oscillation unit to the stapling position.
5) Press the push switch (SW2) on the sorter controller PWB and press the manual staple key to staple and check the stapling position.



6) If the stapling position is outside the specified range, adjust the stapling position with the push switch (SW3).
   Press the staple key of the sorter. The stapler oscillation unit returns to the home position and the adjustment value is stored.
7) Return the DIP switch (SW1) to the original state and install the right cover.

2. Mechanical system

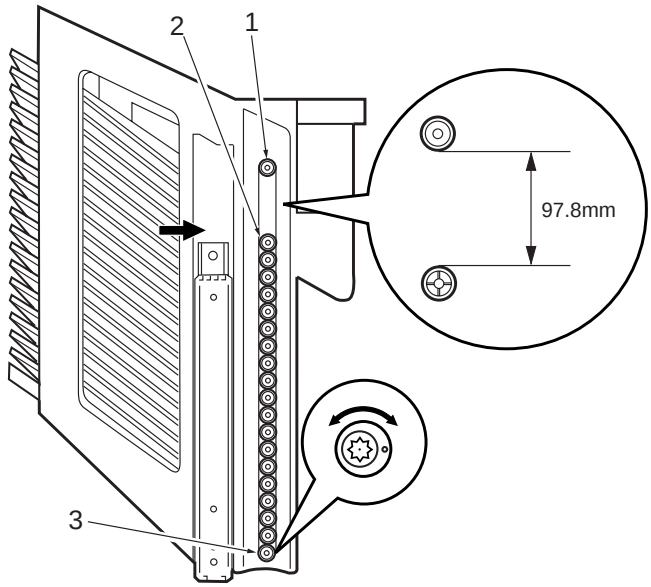
A. Process for major parts replacement

Major parts	Process
Bin, bin roller	1) Bin roller height adjustment
	2) Guide bar parallelism adjustment

B. Bin roller height adjustment

The dummy roller lower is of eccentric shape so that you can adjust the height of the bin roller this is so you can adjust the height at which the bin roller and the lead cam tip touch.
When the bin roller is replaced or reassembled, check the standard dimensions and change and adjust the installing angle of the dummy roller lower if necessary.

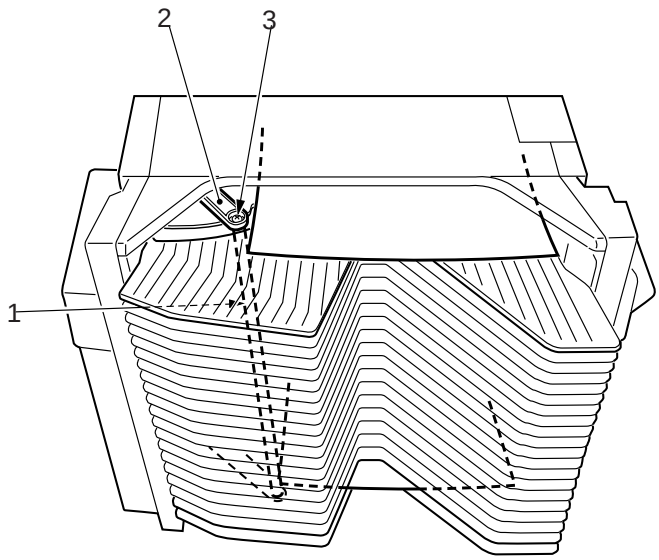
1) Adjustment procedure
   Stand up the bin unit straight. Measure the distance between the upper dummy roller (1) and the bin roller (2). If the distance is too large, rotate the lower dummy roller (3) counterclockwise. If the distance is too small, turn it clockwise. Turn and adjust so that the distance is about 97.8mm.



3. Guide bar parallelism adjustment

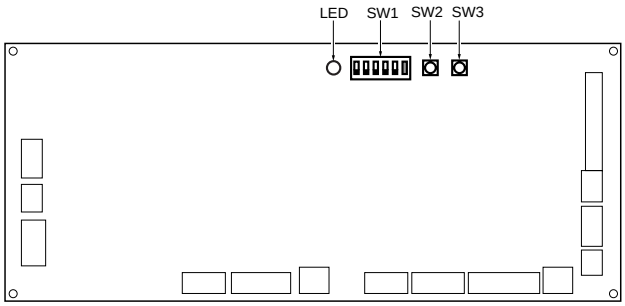
When the bin unit is disassembled or the top screw of the guide bar is removed, adjust the guide bar parallelism.

1) Adjustment procedure
   Set B5 paper or A4R paper in the 1st bin and in the 20th bin.
   Push the guide bar (1) manually in the alignment direction to press it onto the paper.
   Check contact conditions of the guide bar and the paper in the 1st bin and the 20th bin. If they are not parallel, loosen the screw (3) of the guide bar holder (2).



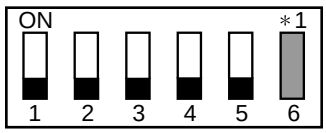
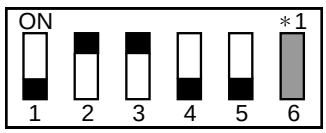
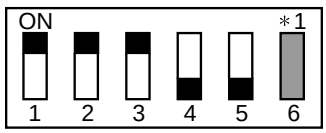
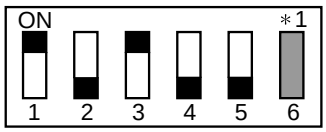
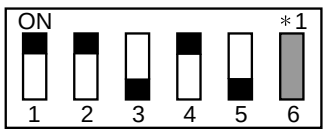
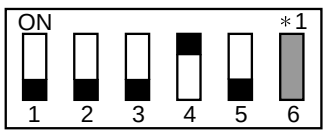
[6] DIAGNOSTICS

1. PWB



2. List of DIP switch functions

The functions of the DIP switch (SW1) on the sorter controller PWB are as follows:

Purpose	DIP switch setup	Content
Normal copy state		• When all are set to OFF, the machine returns to the normal mode.
Transport motor (M2)		• When the manual staple key (SW) is pressed, the transport motor (M2) rotates forward (in the paper transport direction). To stop the motor, press the manual staple key (SW) again.
Sensor adjustment mode (Bin paper sensor)		• When the manual staple key (SW) is pressed, adjustment of the bin paper sensors (S1, S2) is performed. (For details, refer to page 5-1) Adjustment complete: Manual staple key (SW) ON Adjustment error: Manual staple key (SW) blinking In case of an adjustment error, check which sensor is malfunctioning by the error code. Error code F1-91: S1, S2 error
Guide for operation range adjustment mode (When A4 size is used)		• For details, refer to page 5-1.
Guide bar operation range adjustment mode (When letter size is used)		• For details, refer to page 5-1.
Guide bar operation text		• When the manual staple key (SW) is pressed, the guide bar operates. The operation of A4R -> B5 -> Letter R -> A4R is repeated. When the manual staple key is pressed again, the guide bar returns to the home position.
Stapler unit oscillation position adjustment		• For details, refer to page 5-2.

∗1: Do not move No. 6 of DIP switch, which is used only for selection of the communication system with the copier.
(ON: Now IPC communication / OFF: Old IPC communication)

3. Self diagnostics

This machine is provided with the self diagnostics function of the machine state by the CPU (Q1) on the sorter controller PWB. It performs diagnostics occasionally and displays an error message or code on the copier when any abnormality is found.

A. Stack over alarm

Abnormality	Copier operation	Reset
Overload (When the capacity per bin is exceeded during copying)	• Standby state (Start key OFF)	Remove all the paper in the bins.

B. Stapler alarm

Abnoamality	Copier operation	Reset
Staple jam	• Staple sort mode: Alarm display is made when the copy start key is pressed. Copying is disabled. • Other mode Normal operations	Remove the jammed staple and close the stapler unit.
Stapler safety mechanism operating (foreign material is in the stapler)	• Staple sort mode: Alarm display is made when the copy start key is pressed. Copying is disabled. • Other mode Normal operations	Open and close the stapler unit cover.
Staple capacity over (The load quantity per bin exceeds the max. stapling capacity (30 sheets) in the staple sort mode.)	• Staple sort mode: Alarm display is made when the copy start key is pressed. Copying is disabled. • Other mode Normal operations	Remove all the paper from the bins.
Mixed paper sizes (horizontal direction)	• Staple sort mode: Alarm display is made when the copy start key is pressed. Copying is disabled. • Other mode Normal operations	Remove all the paper from the bins.
No staple	• Staple sort mode: Alarm display is made when the copy start key is pressed. Copying is disabled. • Other mode Normal operations	Set a new staple cartridge.

C. Jam

Abnormality	Copier function
Transport delay jam Refer to page 9-8.	Operation stop
Transport remaining jam Refer to page 9-8.	Operation stop
Power ON jam Refer to page 9-8.	No operation
Door open jam Refer to page 9-8.	Operation stop

■ Reset
After processing a jam, turn on the joint switch (MS1)

D. Error

Sub code	Description	
80	Content	The power source (+24V) is not supplied.
	Detail	• The +24V power is not supplied to the sorter control PWB. • The breaker is shut off. • The +24V power detection circuit trouble • The +24V line in the sorter control PWB is checked.
87	Content	Staple unit oscillation motor (M4) lock
	Detail	• When the stapler unit moves from the oscillation home position, the stapler unit oscillation home position switch is kept ON after 50 pulses. • When the stapler unit moves to the oscillation home position, the stapler unit oscillation home position switch is kept OFF for 2 sec. • Stapler unit oscillation motor trouble • Stapler unit oscillation home position switch trouble • Circuit breaker operation • Stapler unit oscillation mechanism trouble • Sorter controller PWB trouble • Check the operations of the stapler shift motor and the sensor with SIM 3-1/2.
89	Content	Bin shift motor lock (M1)
	Detail	• The operation is not completed in the time which is 4 times greater than the specified time after starting the bin shift motor. • When driving the bin shift motor, the signal from the shift motor lock sensor is not detected for 250msec. • When shifting to the home position, the operation is not completed in 20 sec. • Bin shift motor trouble • Lead cam home position trouble • Bin shift mechanism trouble • Circuit breaker operation • Sorter control PWB trouble • Check the operation of the bin shift motor and the sensor with SIM 3-1/2.
91	Content	Bin paper sensor automatic adjustment trouble
	Detail	• The sensor output abnormality in the sensor detection level adjustment • Bin paper sensor trouble • Sorter control PWB trouble • Check the sensor output with SIM 3-2.
94	Content	• Manual staple key abnormality
	Details	• When copying is started with the bin in the home position and while the manual staple key is kept pressed in a mode other than the non-sort mode, and when pressing of the manual staple key is detected for 5 sec. • Manual staple key trouble • Operation PWB trouble

[7] TROUBLESHOOTING

1. Troubleshooting procedures

A. F1-91/Display ON

Cause/ Trouble position	Procedure	Check item	Result	Process
Cable	1	Check that the cable between the sorter controller PWB and the bin unit is properly connected.	NO	Connect properly.
Cable	2	Check that the cable between the bin paper sensor light emitting side (S1) and the light receiving side (S2) is properly connected.	NO	Connect properly.
Installation of bin paper sensor light emitting side (S1) and light receiving side (S2)	3	Check that the bin paper sensor light emitting side (S1) and the light receiving side (S2) are properly installed.	NO	Connect properly. When the bin paper sensor light emitting side (S1) and the light receiving side (S2) are installed again, perform the bin paper sensor sensitivity adjustment. (For the procedure, refer to page 5-1)
Bin paper sensor light emitting side (S1) and light receiving side (S2)	4	When the bin paper sensor light emitting side (S1) and the light receiving side (S2) are replaced and the bin paper sensor sensitivity adjustment is performed, the trouble is canceled.	YES	Replace the bin paper sensor light emitting side (S1) and the light receiving side (S2) and perform the bin paper sensor sensitivity adjustment. (For the procedure, refer to page 5-1)
Sorter controller PWB			NO	Replace the sorter controller PWB, and perform the bin paper sensor sensitivity adjustment, the guide bar motor oscillation range adjustment, and the stapler motor oscillation motor oscillation range adjustment. (For the procedures, refer to pages 5-1 to 5-2)

B. F1-87/Display ON

Cause/ Trouble position	Procedure	Check item	Result	Process
Circuit breaker	1	Check that the circuit breaker on the sorter controller PWB is operating.	YES	Remove the cause of the circuit breaker operation, and press the circuit breaker.
24V power is not supplied	2	Set the tester range to 50VDC. Check that the voltage between J1-1 (+) and J1-2 (–) on the sorter controller PWB is about 24V.	NO	Check 24V of the copier.
Stapler unit oscillation motor (M4)	3	Check that there are pulse outputs at connector J12-2 to -5 on the sorter controller PWB at the operating timing of the stapler unit oscillation motor. Check that J12-1 is +24V.	YES	Check the wiring to the stapler unit oscillation motor. If it is normal, replace the stapler unit oscillation motor.
Stapler unit oscillation motor home position switch (MS4)	4	Set the tester range to 50VDC. Check that the voltage between the sorter controller PWB J6-3 (+) and the case (–) is about 24V (when the joint and the coupler are closed). Check that the voltage between J6-4 (+) and the case (–) is about 24V when the stapler oscillation unit is in the home position, and 0V when it is not.	YES	Stapler unit oscillation motor home position switch (MS4)
Sorter controller PWB				Replace the sorter controller PWB, and perform the bin paper sensor sensitivity adjustment, the guide bar motor oscillation range adjustment, and the stapler oscillation motor oscillation range adjustment. (For the procedures, refer to pages 5-1 to 5-2.)

C. F1-89/Display ON

Cause/ Trouble position	Procedure	Check item	Result	Process
Cable	1	Check that the cable between the bin shift motor and the sorter controller PWB is properly connected.	NO	Connect properly.
Circuit breaker	2	Check that the circuit breaker (CB1) on the sorter controller PWB is operating.	YES	Remove the cause of the circuit breaker operation, and press the circuit breaker.
24V power is not supplied	3	Set the tester range to 50VDC. Check that the voltage between the sorter controller PWB J1-1 (+) and J1-2 (–) is about 24V.	NO	Check the 24V power of the copier.
Bin shift motor (M1)	4	Check that the voltage between the connector J8-1 and J8-2 on the bin shift motor driver PWB is about 24V at the operating timing of the bin shift motor (M1).	NO	Check the wiring to the bin shift motor. If it is normal, replace the bin shift motor.
Sorter controller PWB			NO	Replace the sorter controller PWB, and perform the bin paper sensor sensitivity adjustment, the guide bar motor oscillation range adjustment, and the stapler oscillation motor oscillation range adjustment. (For the procedures, refer to pages 5-1 to 5-2.)

D. F1-94 display ON

Cause/ Trouble position	Procedure	Check item	Result	Process
The manual staple key is pressed when starting copying.	1	Check that there is anything on the key or not.	NO	Start copying in a mode other than the non-sort mode with the bin in the home position to check that the operation is performed normally or not.
Key	2	Press a key and check that the switch on the operation PWB is pressed or not.	NO	Properly connect the cable.
Operation PWB	3	Check the cable connection between the sorter control PWB and the operation PWB.	YES	Replace the operation PWB.

[8] MAINTENANCE

1. Periodic replacement parts

There is no part which must be replaced periodically.

2. Consumable parts life

The following part may deteriorate or require replacement during the warranty period. Replace it if it is deteriorated or broken.

No.	Part name	Part number	No. of part used	Reference of life	Remark
1	Stapler	0GZ4A12553000	1	Stapling 300,000 times	One staple cartridge allows about 5,000 stampling.

3. Periodic services list

This machine has no part which requires periodic servicing.

[9] OPERATIONAL DESCRIPTIONS

1. Outline

This machine performs sorting and stapling of copy paper according to the operation mode set by the copier.
Stapling is made also by the operation of the keys on this machine.
There are following four operation modes;

1. Non-sort mode
2. Sot mode
3. Group mode
4. Staple sort mode

2. Details

The basic operations in each mode are described below.

A. Non-sort mode

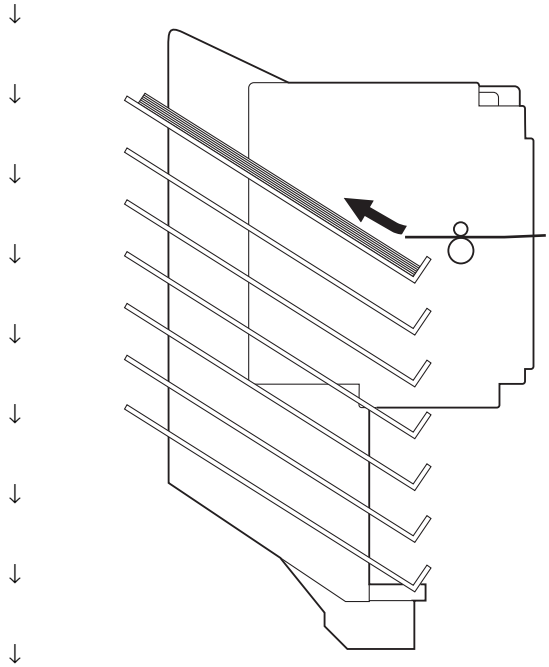
If the sort/group mode is not set, all copy paper is discharged to the 1st bin.

1) Press the copy start key of the copier.

↓

2) Copy paper is discharged to the 1st bin.

↓

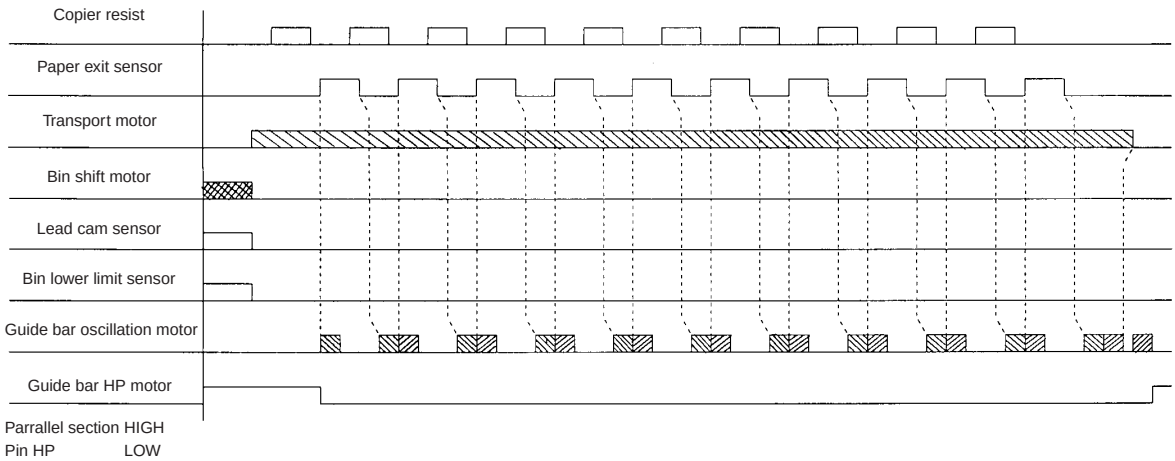


3) Copying of the set quantity is completed.

↓

4) Discharging of the set quantity is completed and the operation is completed.

Non-sort mode (10 black/white sheets)



Forward rotation

Transport	(Transport)
Alignment	(Alignment)
Shift	(Up)
Staple oscillation	(Shifted to the stapling position.)
Staple	(Staple)

Reverse rotation

Transport	(Not)
Alignment	(Save)
Shift	(Down)
Staple oscillation	(Shifted to HP.)
Staple	(Staple jam reset)

- Sort mode (B/W, color): Discharged from the 2nd bin.
  The other modes: Discharged from the 1st bin.

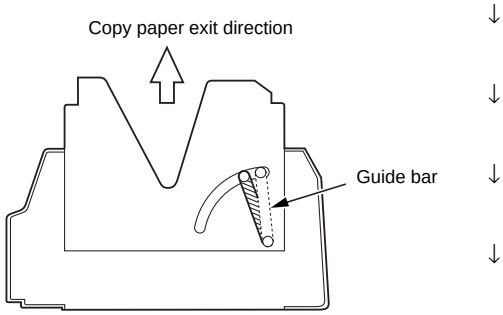
B. Sort mode

When the sort mode is set, alignment of copy pages is automatically performed.

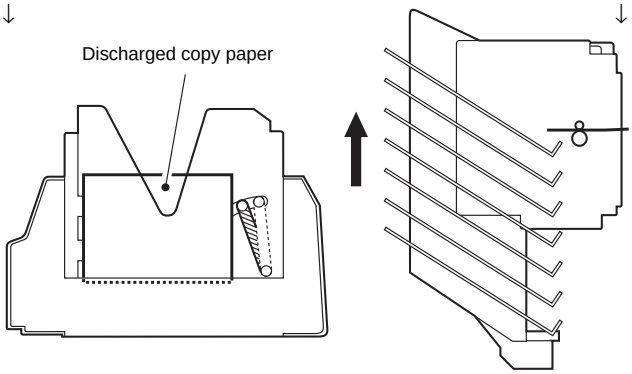
Black/white mode Color mode

1) Press the copy start key of the copier.

2) The guide bar is oscillated from the paper exit center to the half of the paper size +8mm.



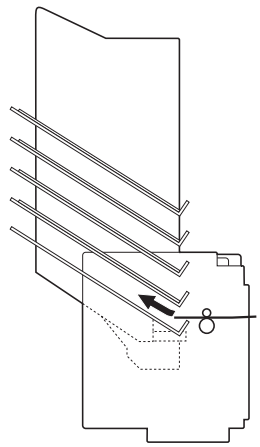
3) Every time paper is discharged, the guide bar oscillates to press the paper to the regulation plate to align paper and the bin is shifted by one.



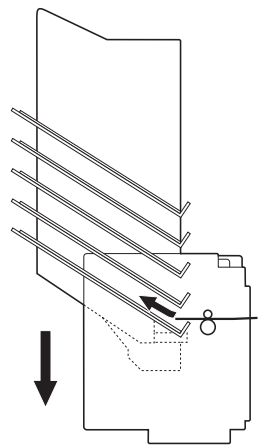
When the number of copy sets is 1 to 19, copies are discharged from the 2nd bin.
When the number of copy sets is 20, copies are discharged from the1st bin.

B/W mode Color mode

4) Copying of the specified quantity is completed.



5) The original is changed and reverse sorting is performed.

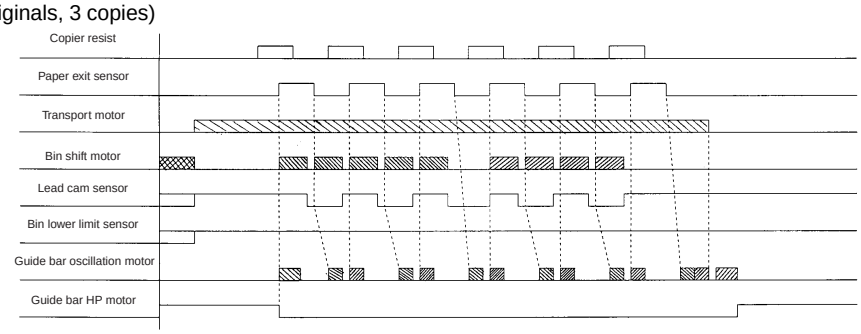


6) The operation is repeated until all the originals are completed.

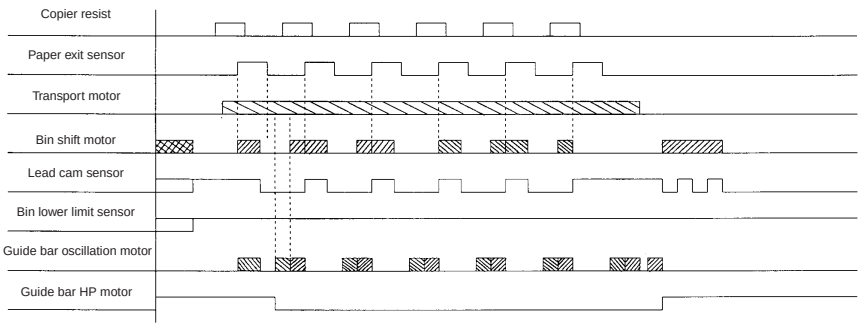
7) After completion of copying, the guide bar returns to the home position.

8) When copying is stopped, the bin which is not closed isshifted.

Sort mode (black/white, 2 originals, 3 copies)



Sort mode (color, 2 originals, 3 copies)



C. Group mode

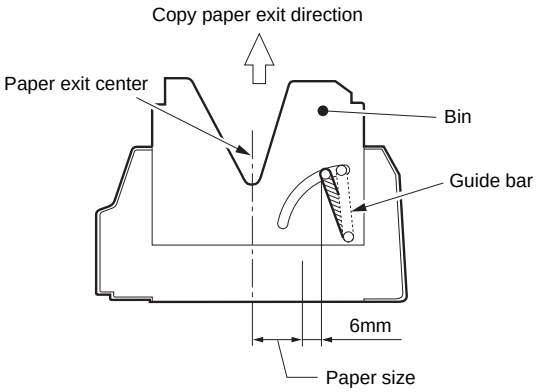
When the group mode is set, the copies of an original set are discharged to one bin.

1) Press the copy start key of the copier.

↓

2) The guide bar is oscillated from the paper exit center to the half of paper size +6mm.

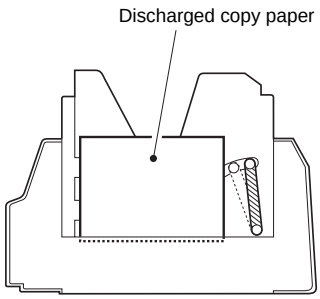
↓



↓

3) Every time paper is discharged, the guide bar oscillates to press the paper to the regulation plate to align paper and the bin is shifted by one.

↓



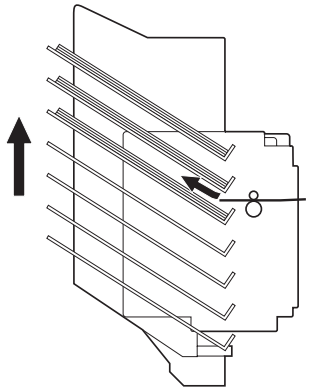
↓

4) Copying of the specified quantity is completed.

↓

5) The original is changed and the bin is shifted by one.

↓



↓

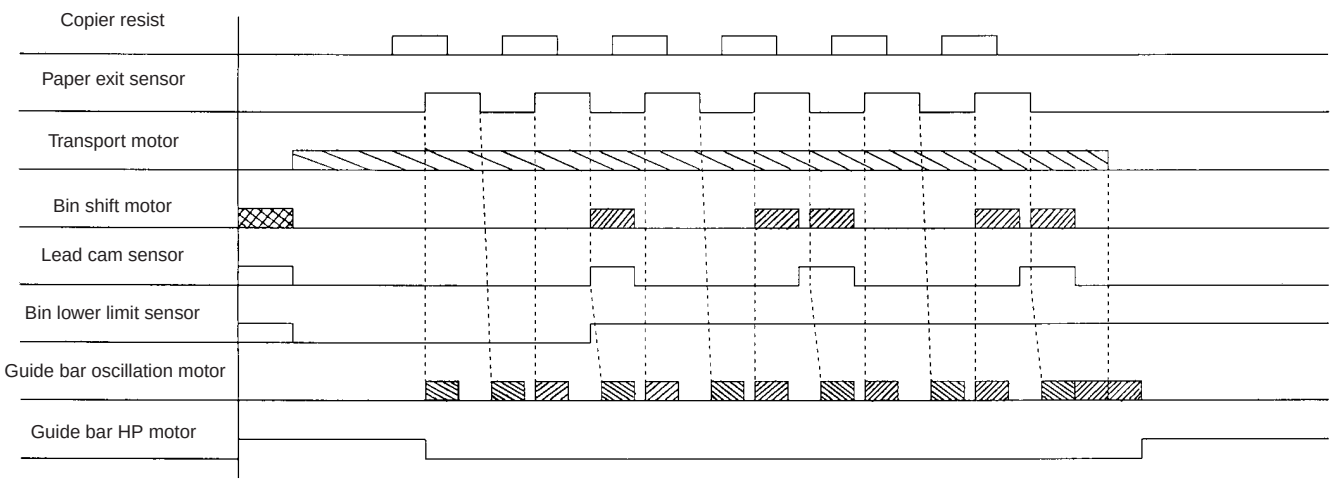
6) The operation is repeated until all the originals are completed.

↓

7) After completion of copying, the guide bar returns to the home position.

Copies are loaded from the 1st bin to the 20th bin sequentially. When the original exceeds 20 pages, loading is returned to the1st bin without reverse sorting.

Group mode (black/white, 3 originals, 2 copies)

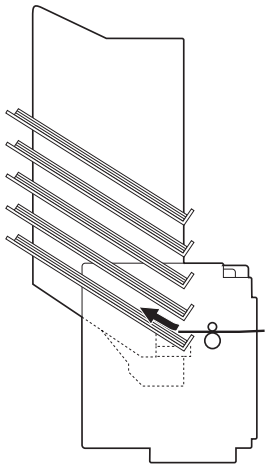


D. Staple sort mode

When the staple mode is set, stapling is automatically performed after sorting the copies.

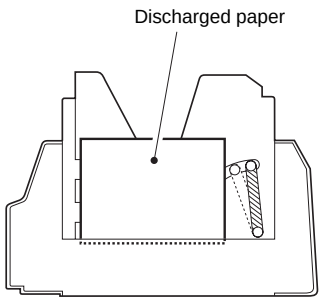
1) The same operations as the sort mode are performed and all copied papers are discharged to the bins.

↓



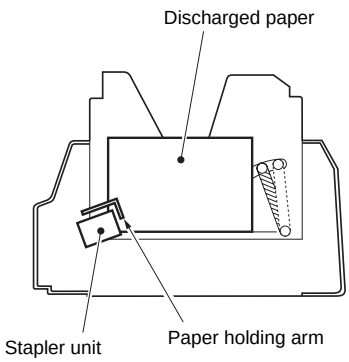
2) The guide bar oscillates.

↓



3) The guide bar aligns the paper.
The stapler unit is shifted to the stapling position.
At the same time, the paper holding arm holds discharged paper.

↓



4) The stapler unit staples the paper.

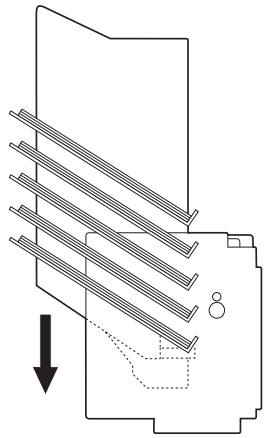
↓

5) The guide bar, the paper holding arm, and the stapler unit are separated from the paper.

↓

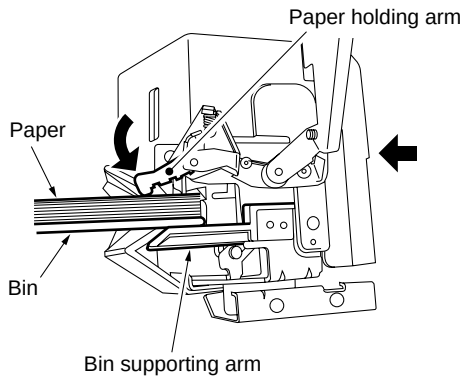
6) The bin is shifted by one.

↓

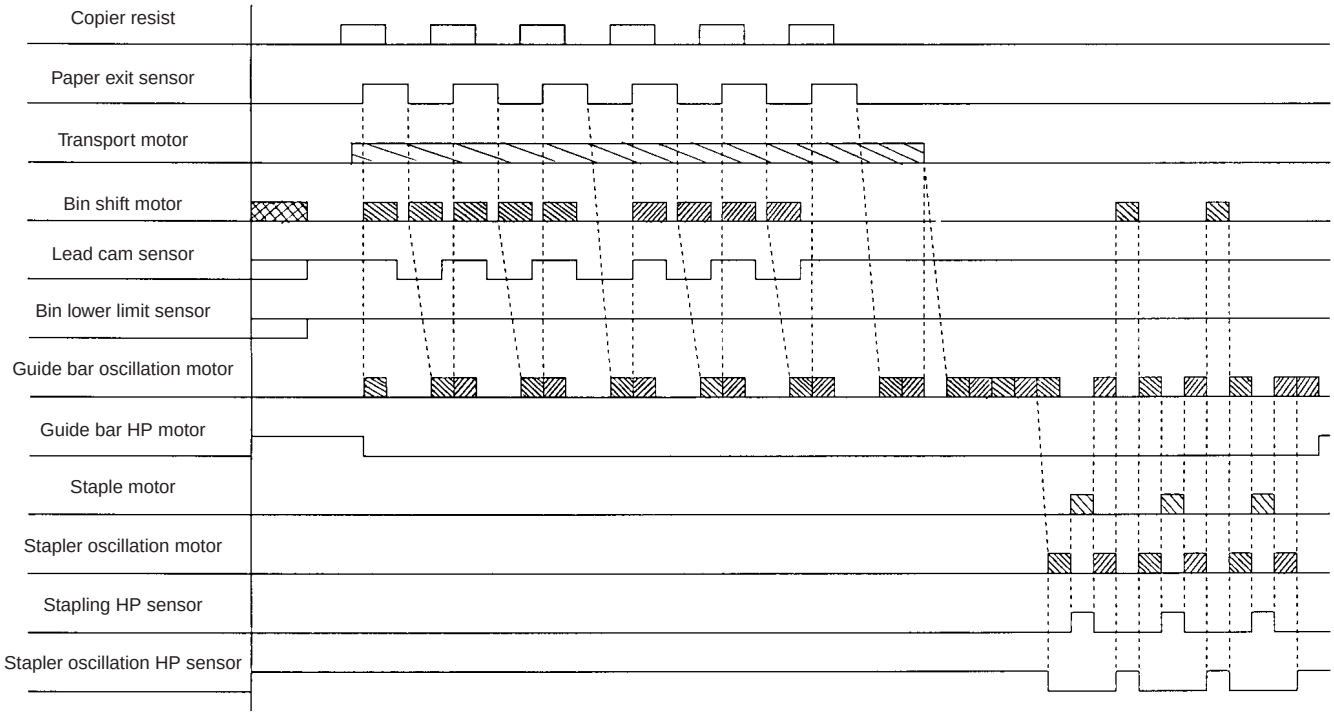


7) Procedures 3 to 6 are repeated for all paper in the bins, and the operation is completed.

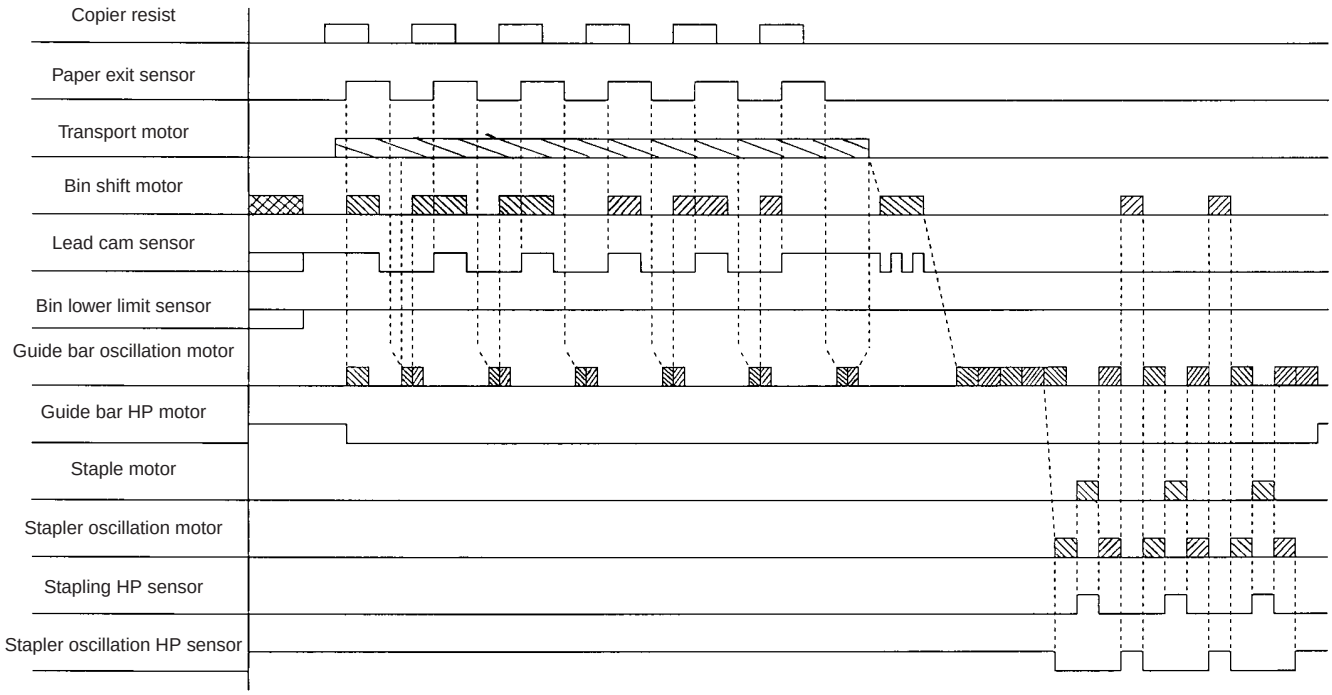
Note: The staple sort mode is valid only when the RADF is used. In the book mode, the staple sort mode can be set, but automatic stanpling cannot be performed.



Staple sort mode (Black/white, 2 originals, 3 copies)



Staple sort mode (Color, 2 originals, 3 copies)



3. Operations of each section

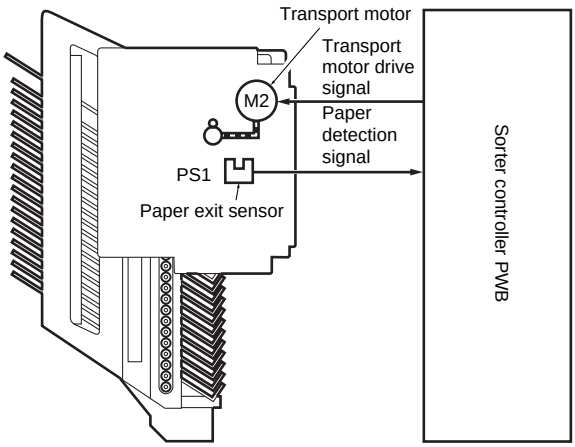
A. Transport drive system

(1) Outline

The transport system transports paper discharged from the copier to the bin by the transport roller. The transport roller is driven by the transport motor (M2).

The paper transport status is detected by the paper exit sensor (PS1) on the sorter controller PWB.

The transport motor is a stepping motor of 4-phase control. The transport speed is controlled with the number of pulses of pulse signals A, A*, B, and B* of the motor driver IC (Q23).



(2) Transport speed control

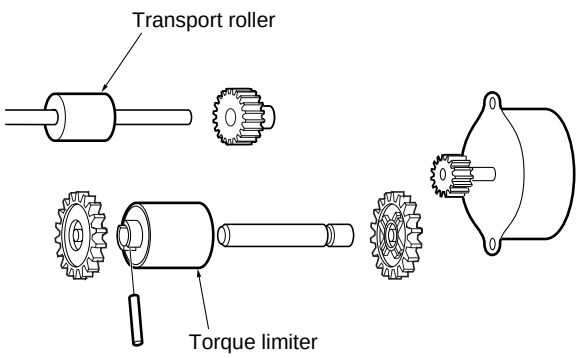
1) Outline

The transport speed is controlled by the transport motor (M2) and the torque limiter. The transport motor changes the transport speed depending on the paper size, and it keeps a fixed speed during transporting without control of the transport speed.

The transport speed of this machine is higher than the process speed of the copier. When copy paper is at the fusing section of the copier and the transport roller of this machine at the same time, the transport roller speed is reduced by the torque limiter.

2) Process speed

The process speed is the speed from when the copy paper is received from the copier to when it is taken into the sorter completely. It is the same as the process speed of the copier.



3) Taking in, paper exit speed

This is the transport speed after discharging of the copy from the fusing section of the copier. It varies depending on the paper size.

Paper size	Transport speed
A4, 8.5"x11"	625mm/sec
A4-R, 8.5"x11"R	675mm/sec
B4, 8.5"x14"	700mm/sec
Fixed paper other than the above	575mm/sec
Unfixed paper	700mm/sec

(3) Stack over

1) Outline

The capacity of bins in each mode is limited as shown below. If the capacity is exceeded, the stack over error occurs.

Non-sort mode	Max. capacity
A3, B4, 11"x17", 8.5"x13", 8.5"x14", 12"x18"	1st bin: 60 sheets
A4, B5, A5, A4-R, B5-R, 8.5"x11", 8.5"x11"R, 5.5"x8.5", 7.25"x10.25"R	100 sheets

Staple sort mode	Max. capacity
A3, B4, 11"x17", 8.5"x13", 8.5"x14"	25 sheets
A4, B5, A4-R, 8.5"x11", 8.5"x11"R	30 sheets

Sort mode	Max. capacity
A3, B4, 11"x17", 8.5"x13", 8.5"x14"	25 sheets
A4, B5, A5, A4-R, B5-R, 8.5"x11", 8.5"x11"R, 5.5"x8.5"	50 sheets

Group mode	Max. capacity
A3, B4, 11"x17", 8.5"x14", 8.5"x13"	25 sheets
A4, B5, A5, 8.5"x11", 5.5"x8.5", A4R, B5R, 8.5"x11"R	30 sheets

(4) Paper jam

When the sorter detects a jam, it sends the jam signal (SJAM) to the copier. Then the copier stops copying and displays "Paper feed check" on the display section.

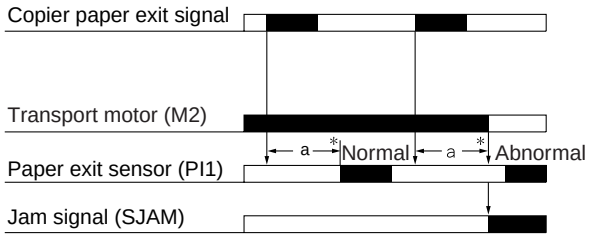
After completion of removing the jam, press the copy start key again, and the jam-corrected number of copies are automatically made and discharged to the bins.

When, on the other hand, a jam occurs in the copier, all the copy papers under transportation in the sorter are discharged to the specified bins and the operation is stopped.

Note: When a paper jam is detected in the sorter, separate the sorter from the copier (the joint sensor is turned OFF), and remove the jammed paper. Then reset the sorter to the copier, and the trouble will be canceled.

1) Transport delay jam

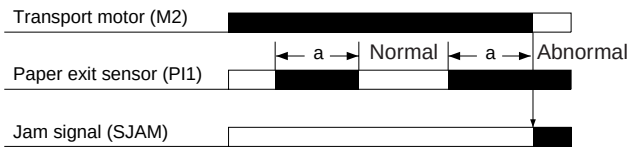
The paper exit sensor does not detect the paper in 300msec of transport time (which varies depending on the copier) after reception of the paper exit signal from the copier.



∗ 300msec transport time (Varies depending on the model)

2) Transport remaining jam

The paper does not pass over the paper exit sensor within the transport time of 2 sheets of copy paper after the paper exit sensor (PS1) detects the paper.



a: Copy paper length x 2 (mm) + copier's paper exit speed (mm/sec)

3) Power ON jam (Jam paper remaining detection)

When the power switch of the copier is turned on, if the paper exit sensor is ON, the SJAM signal is generated.

4) Door open jam

When the sorter is separated from the copier during operation, the SJAM signal is generated.

■ After removing the above jam error, press the copy start key, and the remaining quantity of copies are automatically made by the jam correction function. ON the other hand, when a jam occurs in the copier, all the copy papers transporting in the sorter are discharged to the specified bin and the sorter is stopped.

B. Bin unit drive system

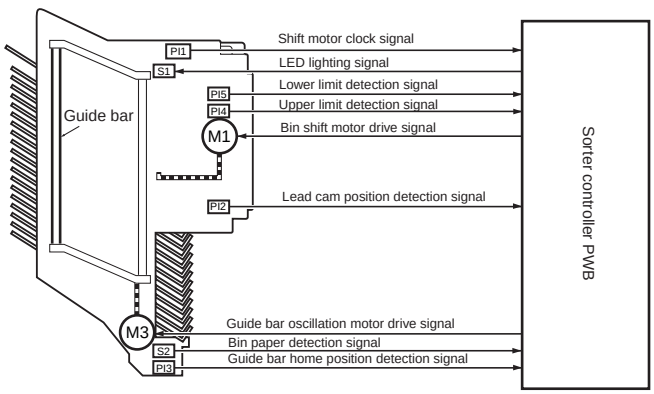
(1) Outline

The bin unit drive system is composed of the following drive systems.

- Bin drive system
- Guide bar drive system

The bin is driven by the bin shift motor (M1), and moved up and down.

The guide bar is driven by the guide bar motor (M3) to align the discharged copy paper.



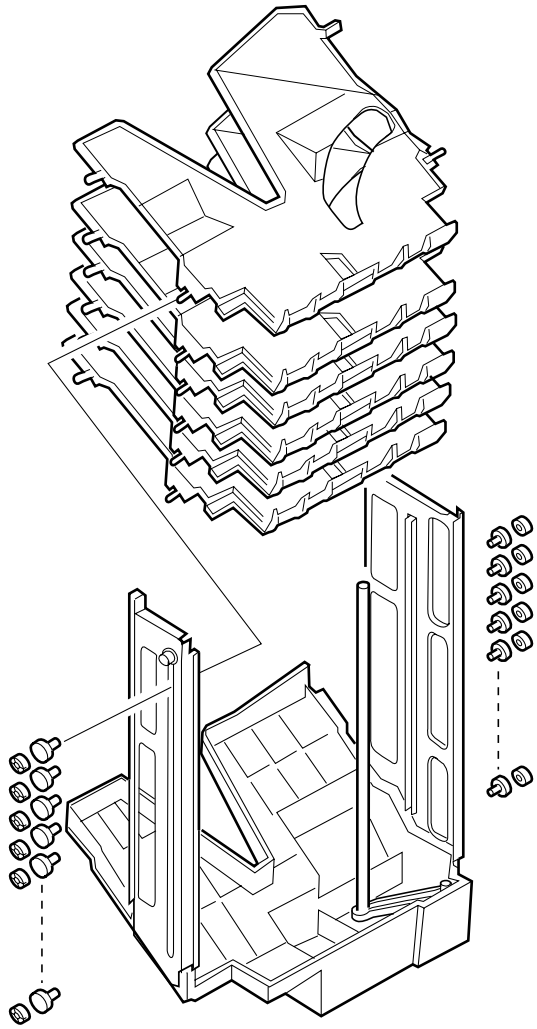
(2) Bin unit

1) Bin unit composition

The bin unit is composed as shown below.

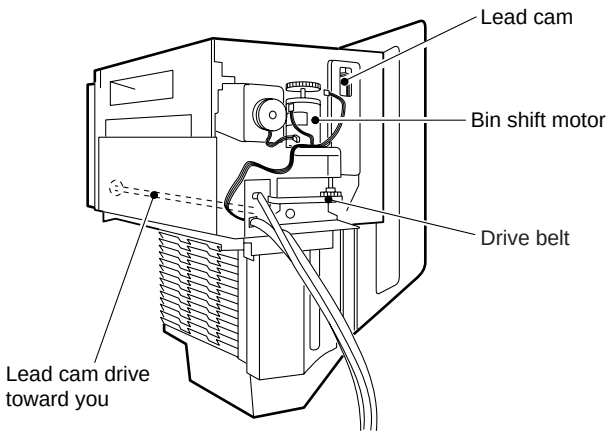
The both sides of each bin are provided with the roller from the outside of the bin frame. The dummy rollers on the upper and the lower sides are integrated with the bin unit and fixed to the both ends of the bin frame.

The lower dummy roller is of eccentric shape to adjust the bin roller height.

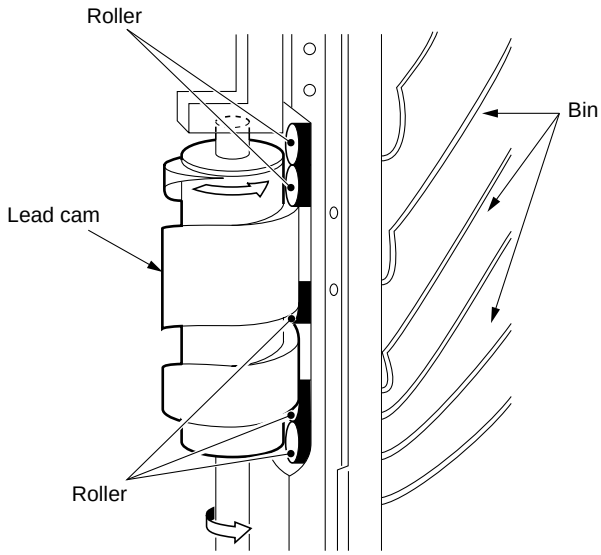


2) Lead cam function

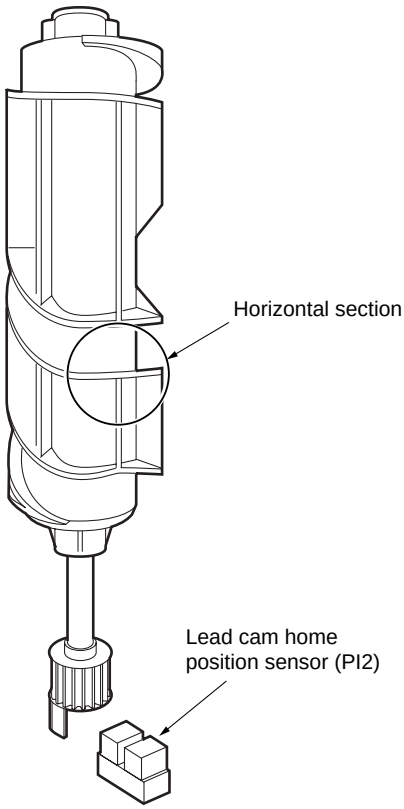
The lead cam is attached to be engaged with the bin unit roller. It is driven by the bin shift motor (M1) which can rotate forward and reverse.



When the lead cam rotates and the roller moves up and down along the lead cam, the bin connected with the bin frame and the roller is moved up and down.



If, however, all the grooves in the lead cam were slanted, the lead cam would be rotated by the weight of the bin unit when the bin unit is stationary. To prevent against this, the groove has the horizontal section as shown below. The lead cam home position sensor detects the position so that the roller comes at the horizontal section when the bin unit is stationary.



3) Bin shift motor control

The bin shift motor control circuit is shown below.

The bin shift motor (M1) is a DC motor, and controlled by the drive circuit to move the bin unit up and down.

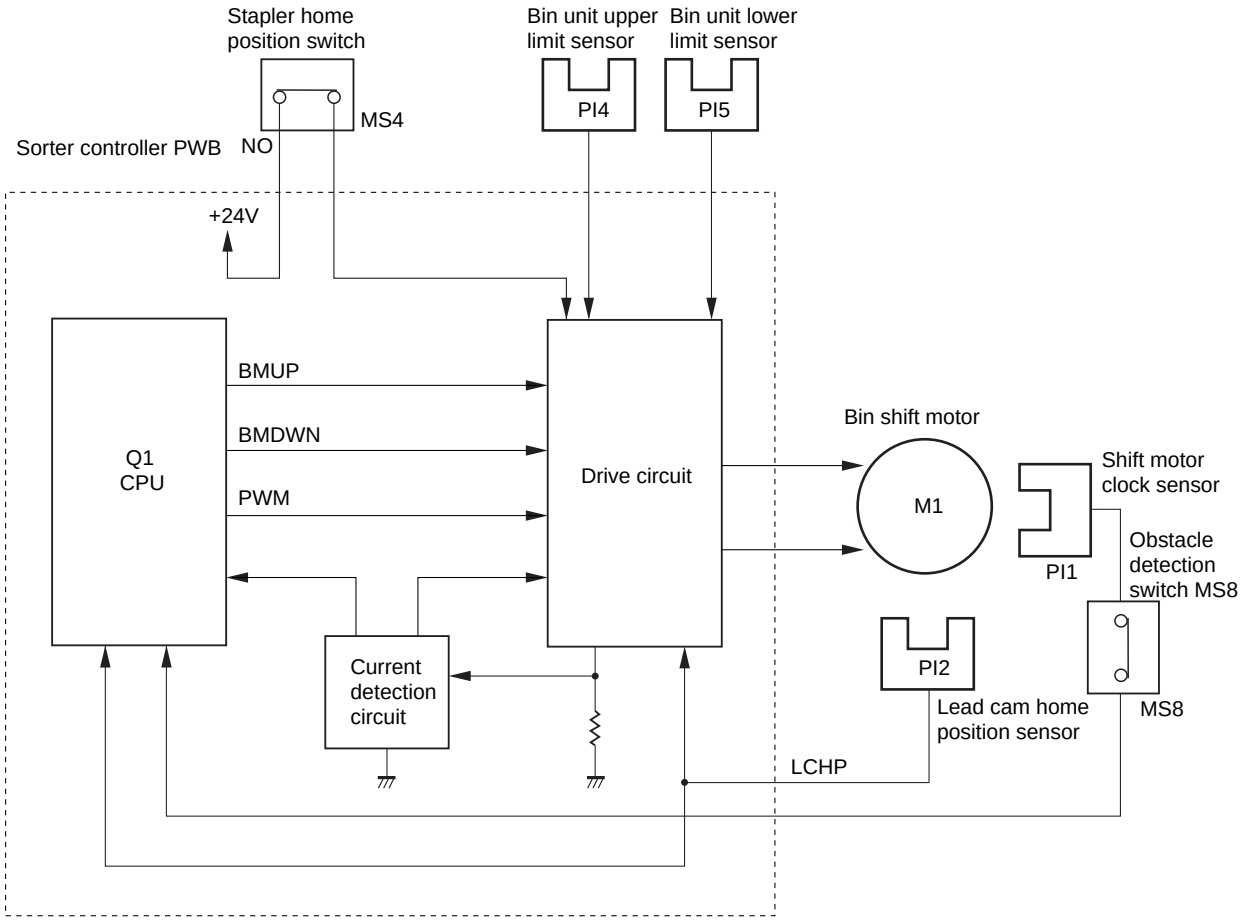
The up/down moving speed of the bin unit is detected and controlled by the shift motor clock sensor.

The stop position of the bin unit is detected by the lead cam home position sensor.

When the stapler unit is not in the home position, the +24V power is interrupted by the stapler home position switch to stop the bin shift motor in order to prevent against a crash of the bin unit and the stapler unit.

An overrun is prevented by the bin unit upper limit sensor and the lower limit sensor.

The current detection circuit is provided to detect an overcurrent when the bin unit is interrupted by a foreign material. It stops the bin unit at that time.



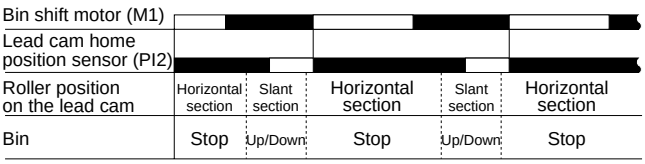
4) Bin shift motor rotation control

The bin shift motor that drives the lead cam is controlled depending on the copy speed data sent from the copier.

The microcomputer on the sorter controller PWB controls the bin shift motor as follows:

- Paper exit: The bin roller is moved to the parallel section of the lead cam and stopped there.
- Transport: The bin is shifted by one.

The microcomputer on the sorter controller PWB controls the rpm of the bin shift motor so that the bin is shifted by one during the transport interval of copy paper.



(3) Guide bar control

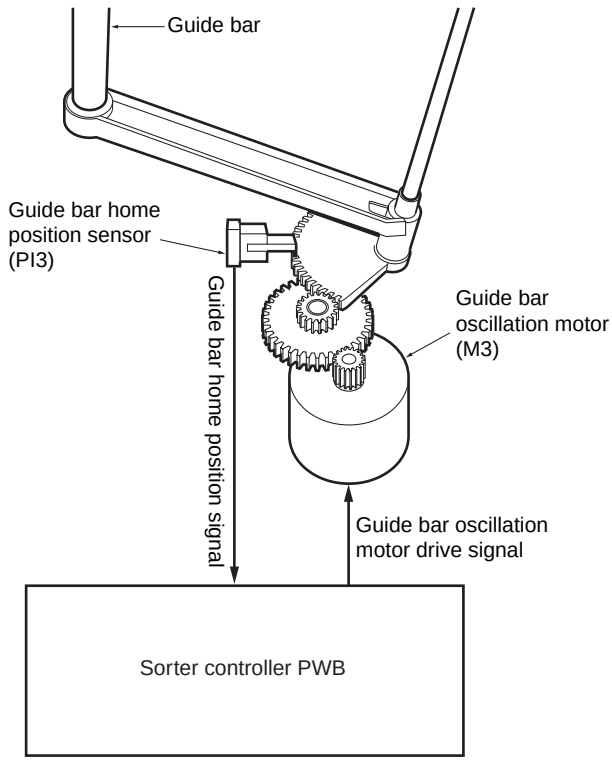
1) Outline

The guide bar is in the bin unit. It oscillates as shown below.

The guide bar has the following functions:

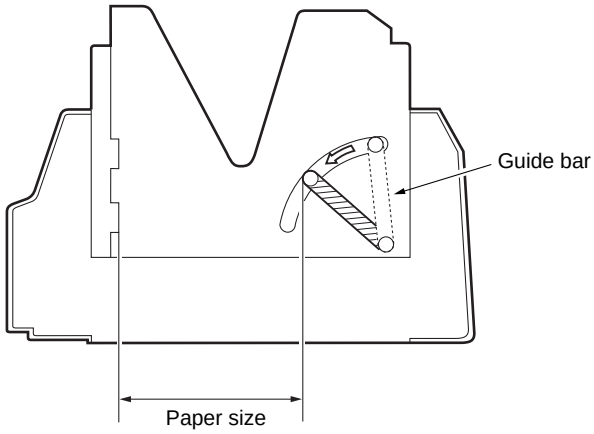
The guide bar is driven by the guide bar oscillation motor (M3).

The guide bar home position sensor (PI3) detects that the guide bar is in the home position.


Guide bar
Guide bar home position sensor (PI3)
Guide bar home position signal
Guide bar oscillation motor (M3)
Guide bar oscillation motor drive signal
Sorter controller PWB

2) Alignment operation

The alignment operation of the guide bar is performed every time when copy paper is discharged. When stapling is made, it holds copy paper.



3) Guide bar oscillation motor (M3) control

The control circuit of the guide bar oscillation motor (M3) is shown below.

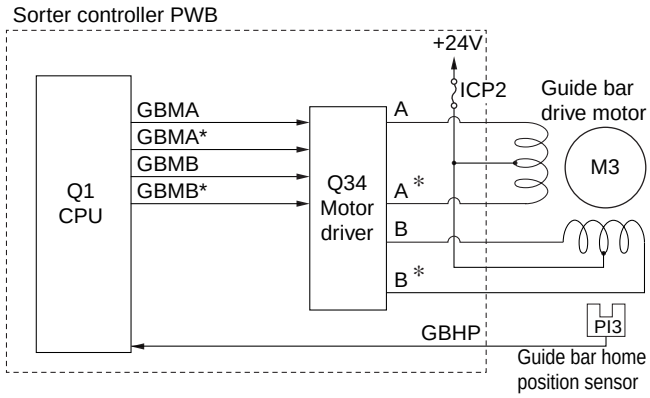
The guide bar oscillation motor is a stepping motor of 4-phase control.

The sorter controller PWB sends drive pulses (GBMA, GBMA*, GBMB, GBMB*) to the motor driver.

The motor driver controls the output timing of the pulse signals (A, A*, B, B*) according to each signal to turn ON/OFF the guide bar oscillation motor and switch the rotating direction.

When the guide bar oscillation motor (M3) is held, the output timing of the pulse signals (A, A*, B, B*) is fixed.

The fuse (ICP2) breaks the power supply circuit when an overcurrent flows through the circuit to stop the guide bar oscillation motor (M3).



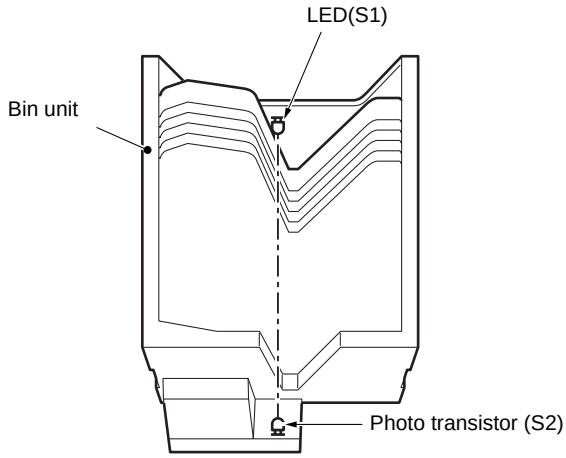
(4) Bin paper sensor

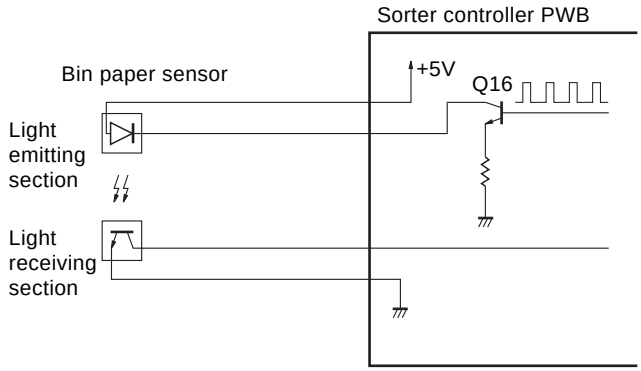
1) Outline

The bin paper sensor is composed of the LED and the photo transistor. It detects paper in the bin.

This machine executes the paper detection level correction automatically and periodically to prevent against malfunctions due to light quantity change in each sensor.

Note: When the sensor light receiving section (S2) is exposed to external lights during correction of the paper detection level, an erroneous correction value is stored. In such a case, "E525" is displayed on the operation panel of the copier during the normal operation.





(5) Other sensors

1) Bin unit lower limit sensor (Home position sensor)

The bin unit returns to the home position when the copy start key is pressed ON or when all the paper in the bins are removed.

In that case, the actuator section integrated with the bin unit passes over the bin unit lower limit sensor (PI4) to turn on the sensor, sending signals to the CPU of the sorter controller PWB.

When the bin unit is falling further from the home position, the lead cam home position sensor turns OFF to detect the lower limit. The sorter controller PWB immediately stops the bin shift motor (M1) drive and displays the error code on the operation panel of the copier at the same time.

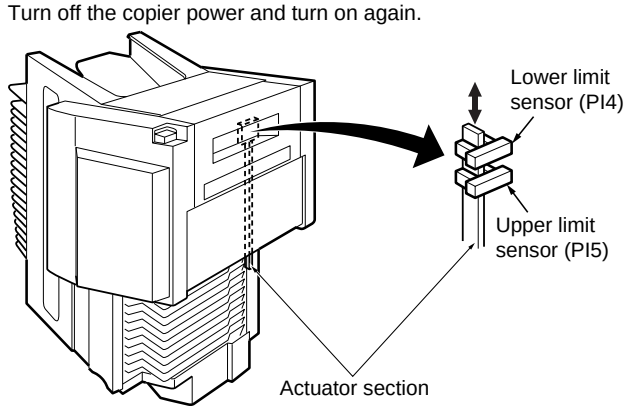
2) Bin unit upper limit sensor

The bin unit upper limit detection is performed by the actuator section integrated with the bin unit and the bin unit upper limit sensor (PI5).

When any abnormality occurs and the bin unit moves up further from the 20th bin, the actuator section passes over the upper limit sensor to turn on the sensor, sending signals to the CPU of the sorter controller PWB. It immediately stops the bin shift motor (M1) drive and displays the error code on the operation panel of the copier at the same time.

■ Reset

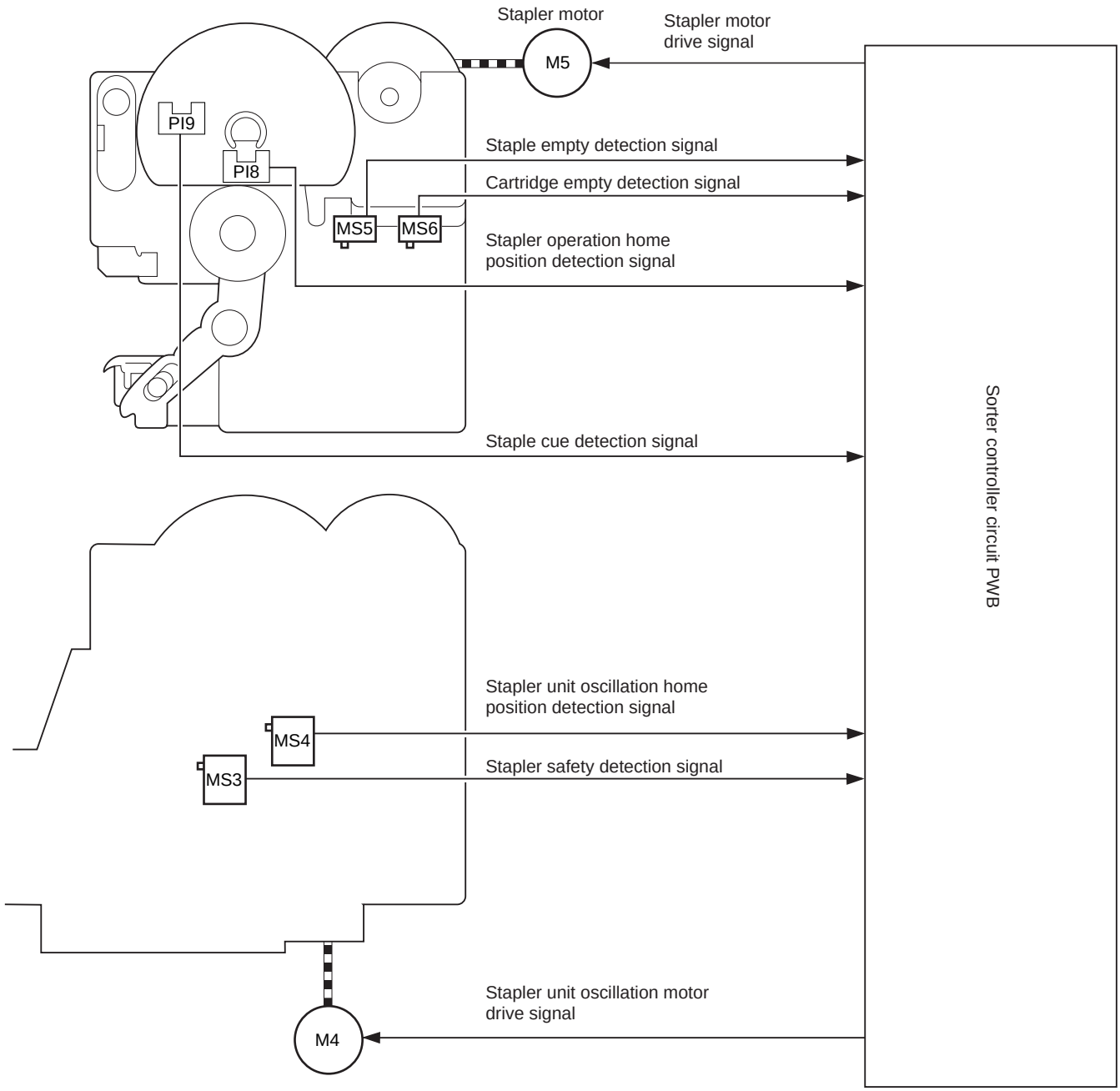
Turn off the copier power and turn on again.



C. Stapler unit drive system

(1) Outline

The stapler unit staples paper discharged into the bins.
The stapling is driven by the stapler motor (M5).
The stapler unit oscillation is performed by the stapler unit oscillation motor (M4).
The stapler unit home position is detected by the stapler unit oscillation home position switch (MS4) and the stepping motor is driven by the specified number of pulses to move the stapler unit to the oscillation position.
During oscillation, the stapler presses the paper holding lever to hold paper during stapling.



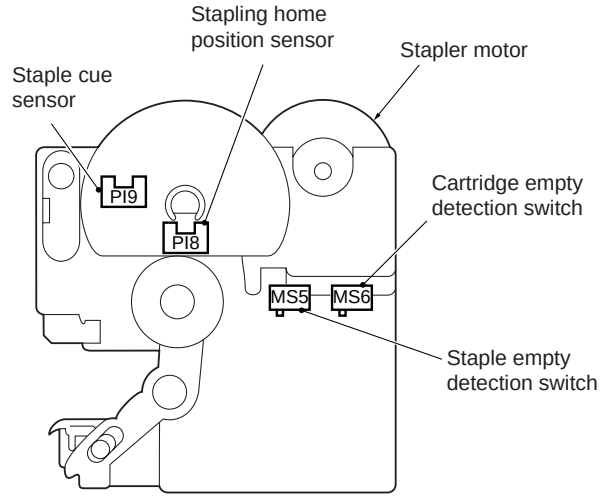
(2) Stapler unit

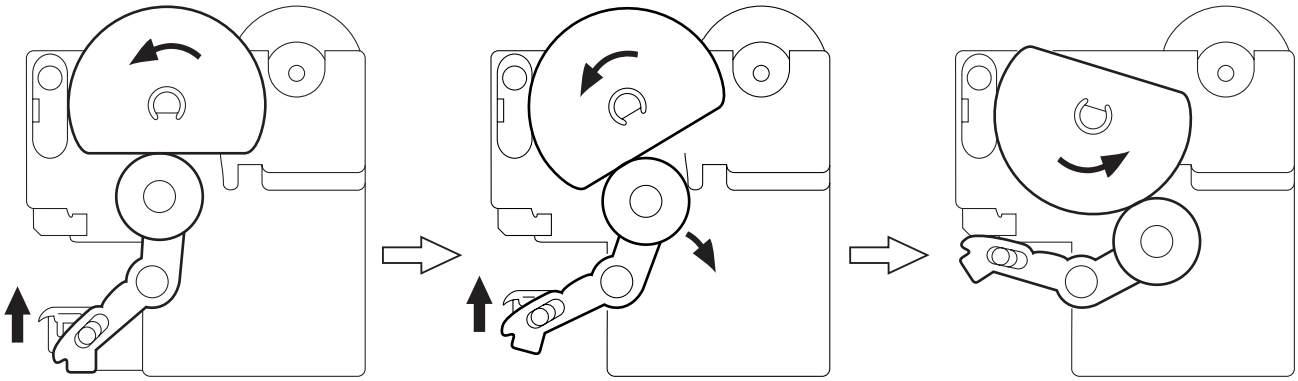
1) Outline

The staple unit composition is shown in the figure below.

Stapling is driven by the stapler motor (M5). Stapling is made by the rotation of the cam. The staple home position sensor (PI8) detects one cycle of stapling.

The cartridge empty detection switch (MS6) detects the staple cartridge empty. The staple empty detection switch (MS5) detects staple empty in the cartridge.





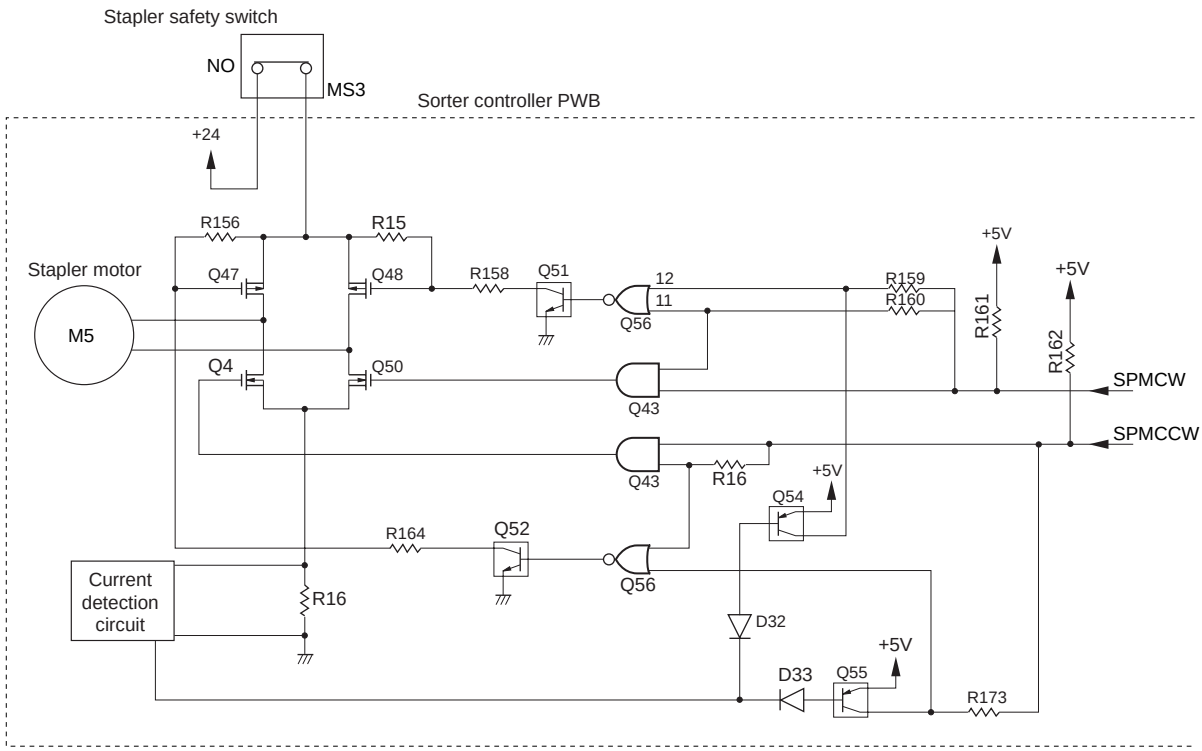
2) Stapler motor (M5) control

a. Outline

The block diagram below shows the stapler motor control circuit. The stapler motor is a DC motor. This circuit has the following functions.

- ON/OFF control of the stapler motor
- Rotating direction control of the stapler motor
- Overcurrent protection of the stapler motor

The stapler safety switch is provided in the power supply path to the stapler motor (M5).
When a material of about 5.5mm or greater enters the staple section, the stapler safety switch (MS3) cuts off the power source for driving the stapler motor (M5).



b. Stapler motor ON/OFF control

ON/OFF and the rotation direction of the stapler motor are controlled by the combination of the following two signals.

1. Stapler motor forward rotation signal (SPMCW*)
2. Stapler motor reverse rotation signal (SPMCCW*)

Stapler motor rotating direction	SPMCW*	SPMCCW*
Forward	1	0
Reverse	0	1
Stop	1	0

c. Stapler motor overcurrent protection

When the stapler motor starts rotation, the current detection circuit detects the current flowing through the stapler motor.
When an overcurrent is detected, the current detection circuit turns on Q54 and Q55 to control the stapler motor drive.

3) Stapler motor staple jam control

When a staple jam occurs in the stapler unit, the stapler motor (M5) is controlled as follows.

1) An overload is applied to the stapler motor by a staple jam.

↓

2) The stapler does not return to the home position within about 0.6sec after starting stapling.

↓

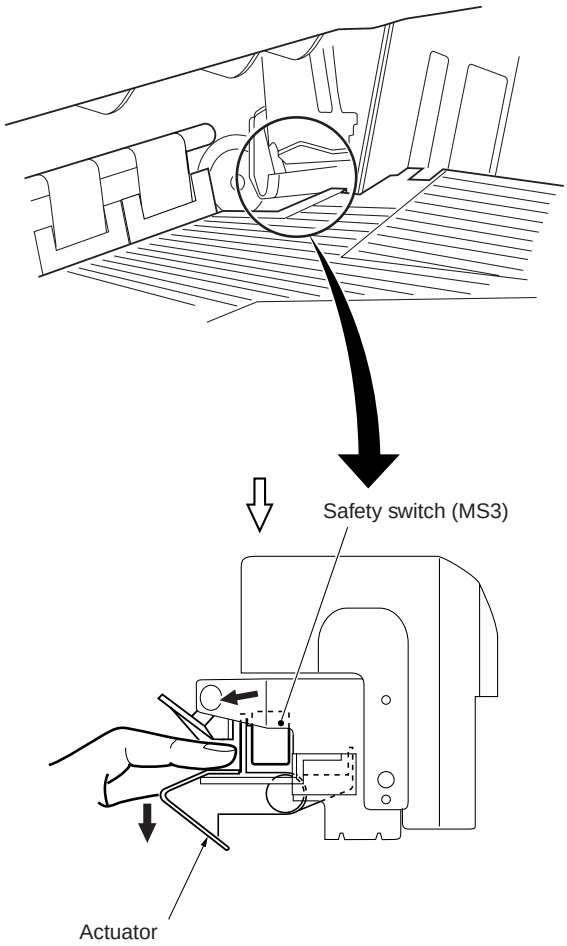
3) The stapler motor is rotated in reverse to return to the home position of stapling.

↓

4) An alarm is made to the copier.

4) Safety switch (MS3)

When your finger enters the stapling position, the actuator is lowered to turn off the safety switch. When the safety switch is turned off, the stapler motor (M5) power is cut off and the signal is sent to the CPU to turn off the drive signal of the stapler motor (M5) to stop stapling.



5) Staple empty detection

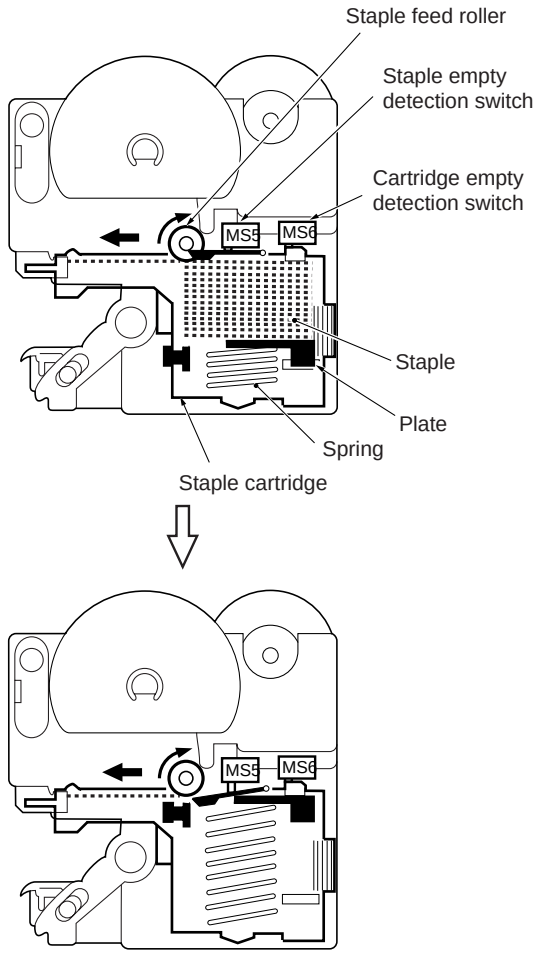
The staple empty detection in the staple cartridge is made by the staple empty detection switch (MS5) provided in the stapler.

The staples in the staple cartridge are pushed up by the spring and the plate. the staples are also pushed toward the tip of the stapler.

When there are staples in the cartridge, the staple empty detection switch (MS5) is pushed by the staples and the sorter controller detects presence of the staples.

When the staples are exhausted (when the remaining quantity of the staples becomes about 40 pcs.), the staple detection switch (MS5) is opened (MS5: normal open), and the sorter controller detects staple empty. At the same time, the sorter controller displays the staple supply display.

When staple empty is detected, stapling is stopped. When, however, staple empty is detected during continuous stapling, stapling is stopped after completion of the job.



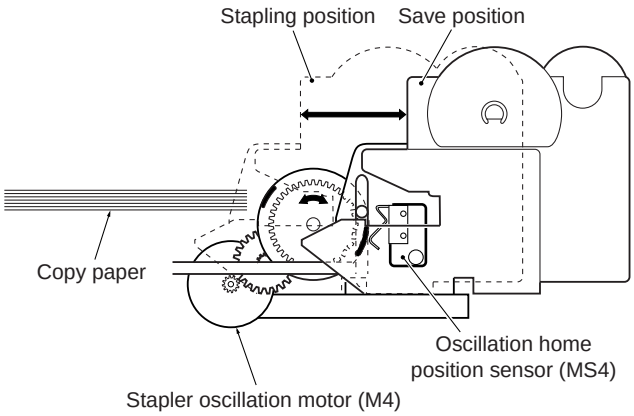
(3) Stapler unit oscillation control

1) Outline

When the bin is shifted, the stapler unit oscillates as shown below so that the stapler unit does not make contact with the paper in the bin.

Oscillation is performed by the stapler unit oscillation motor (M4). When the stapler unit reaches the stapling position, the drive power is supplied to the stapler motor.

To detect the home position, the stapler home position switch (MS4) is provided.

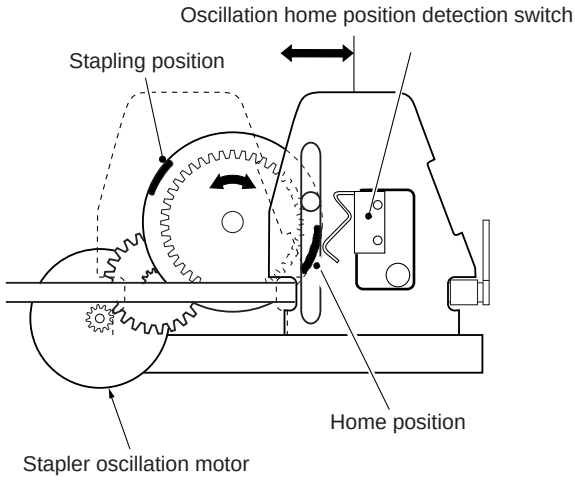


2) Stapler unit oscillation position detection

The stapler unit home position is detected by the stapler unit home position switch (MS4).

The stapler unit home position switch (MS4) detects that the stapler unit is in the home position.

The stapling position is determined by the pulse number to drive the stapler unit oscillation motor (M4).



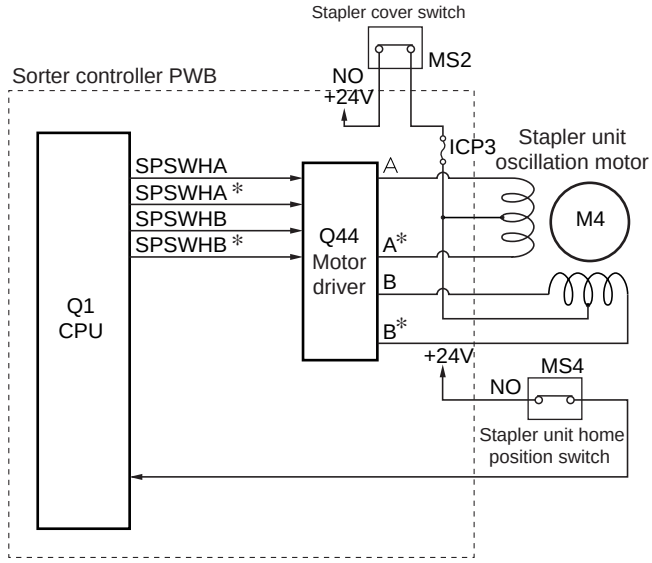
3) Stapler unit oscillation motor control

a. Outline

The stapler unit oscillation motor (M4) control circuit is shown in the figure below.

The stapler unit oscillation motor is a stepping motor of 4-phase control. By controlling the outputs of pulse signals (A, A*, B, B*), the stapler unit oscillation motor (M4) ON/OFF and its rotating direction are switched.

The power supply circuit of the stapler oscillation motor (M4) is provided with the stapler cover switch (MS2) and the fuse (ICP3). The stapler cover switch cuts off the power supply circuit when the stapler cover is opened. The fuse (ICP3) cuts off the power supply circuit when an overcurrent flows through the circuit. The stapler unit oscillation motor (M4) is stopped in that manner.



b. Operation

The microcomputer on the sorter controller PWB receives a command of the staple mode from the copier. The microcomputer (Q1) sends the drive pulses (SPSWHA, SPSWHA*, SPSWHB, SPSWHB*) to the driver circuit.

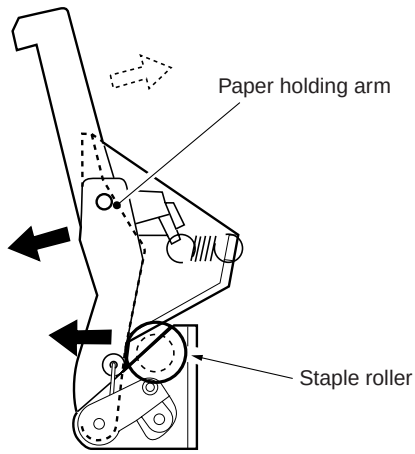
The motor driver circuit drives the stapler unit oscillation motor (M4) according to the signal.

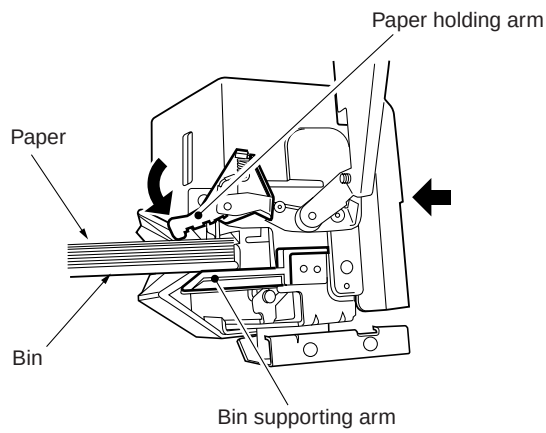
When the stapler unit oscillation motor is held, the output timing of the pulse signals (A, A*, B, B*) is fixed.

(4) Paper holding

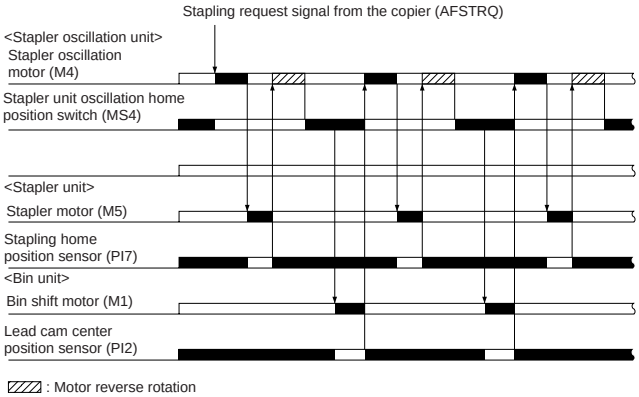
1) Outline

Paper holding is performed during stapling. The paper holding arm presses paper by the stapler roller when the staple unit oscillates. At the same time, the stapler unit bin supporting arm supports the bin from the bottom to stable stapling operation.





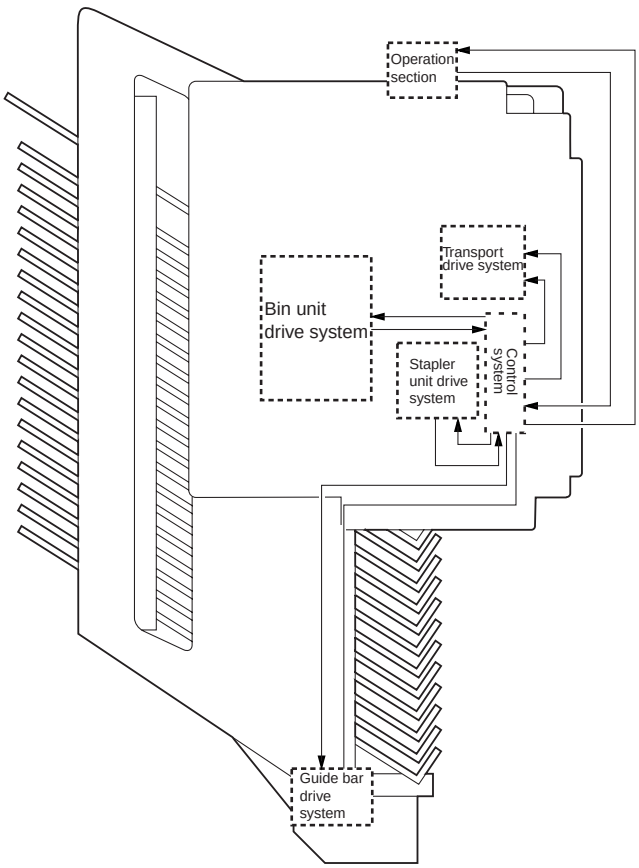
(5) Stapling timing (3 originals, 3 copies)



4. Electric circuit operations

A. Composition of functions

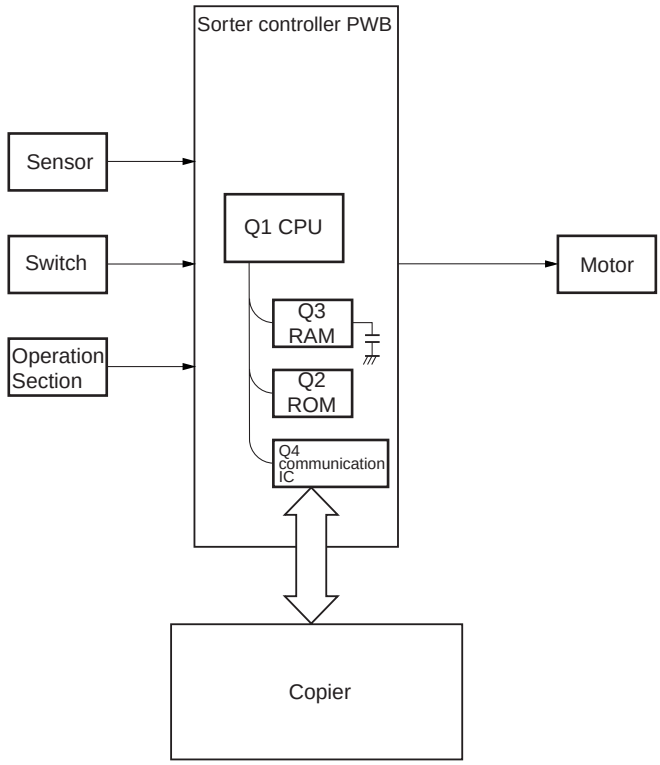
The functions of this machine are largely classified into the following six blocks: the transport drive system, the bin unit drive system, the stapler unit drive system*, the guide bar drive system, and the control system.



B. Outline of the electric circuit

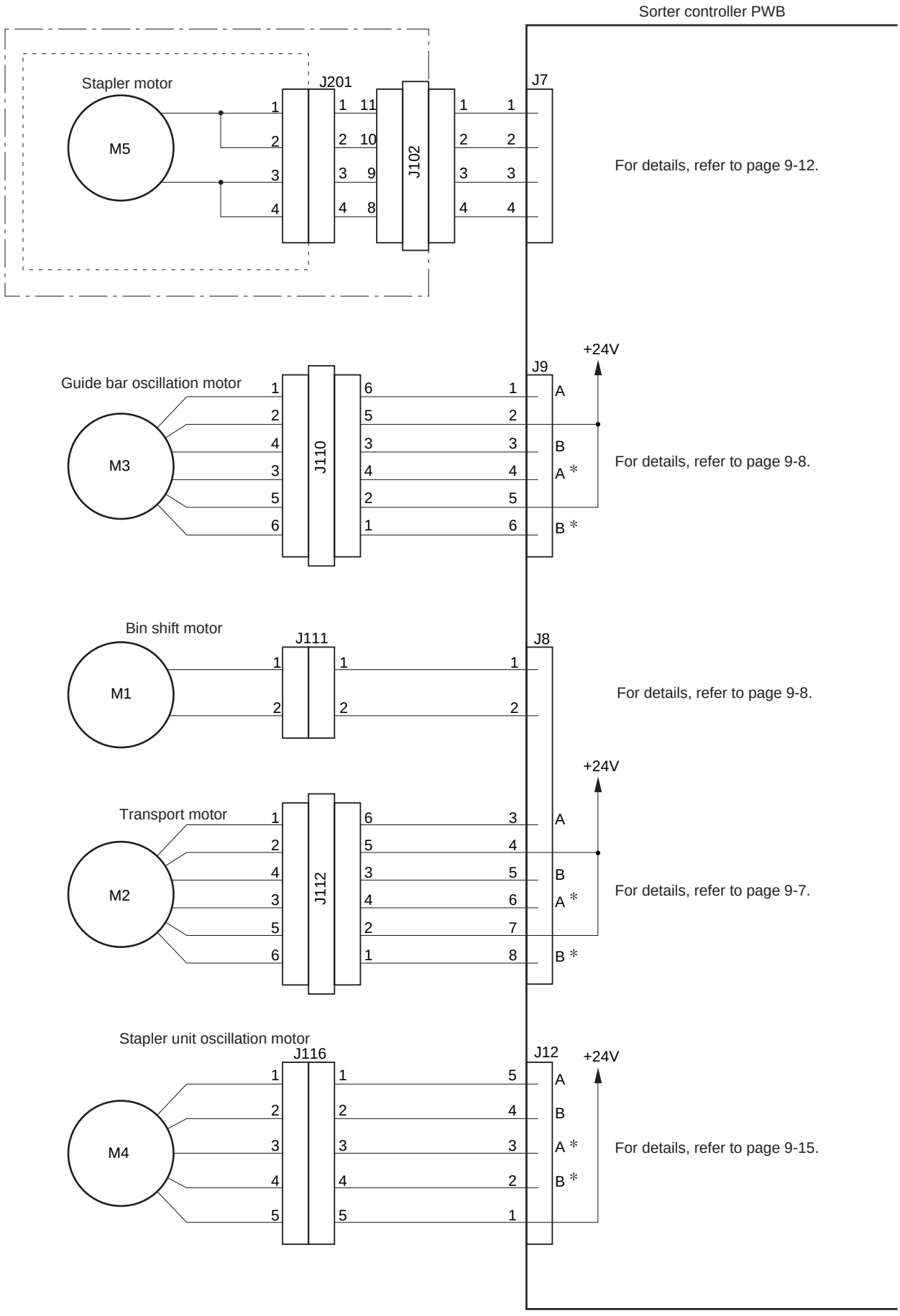
The electrical control of this machine is made by the sorter controller. The major rolls of the IC on the sorter controller are as follows:

Code	Role
Q1	Sequence control
Q3	Contains the sequence program.
Q2	Sensor adjustment values, and operation modes.
Q4	Control of communication with the copier

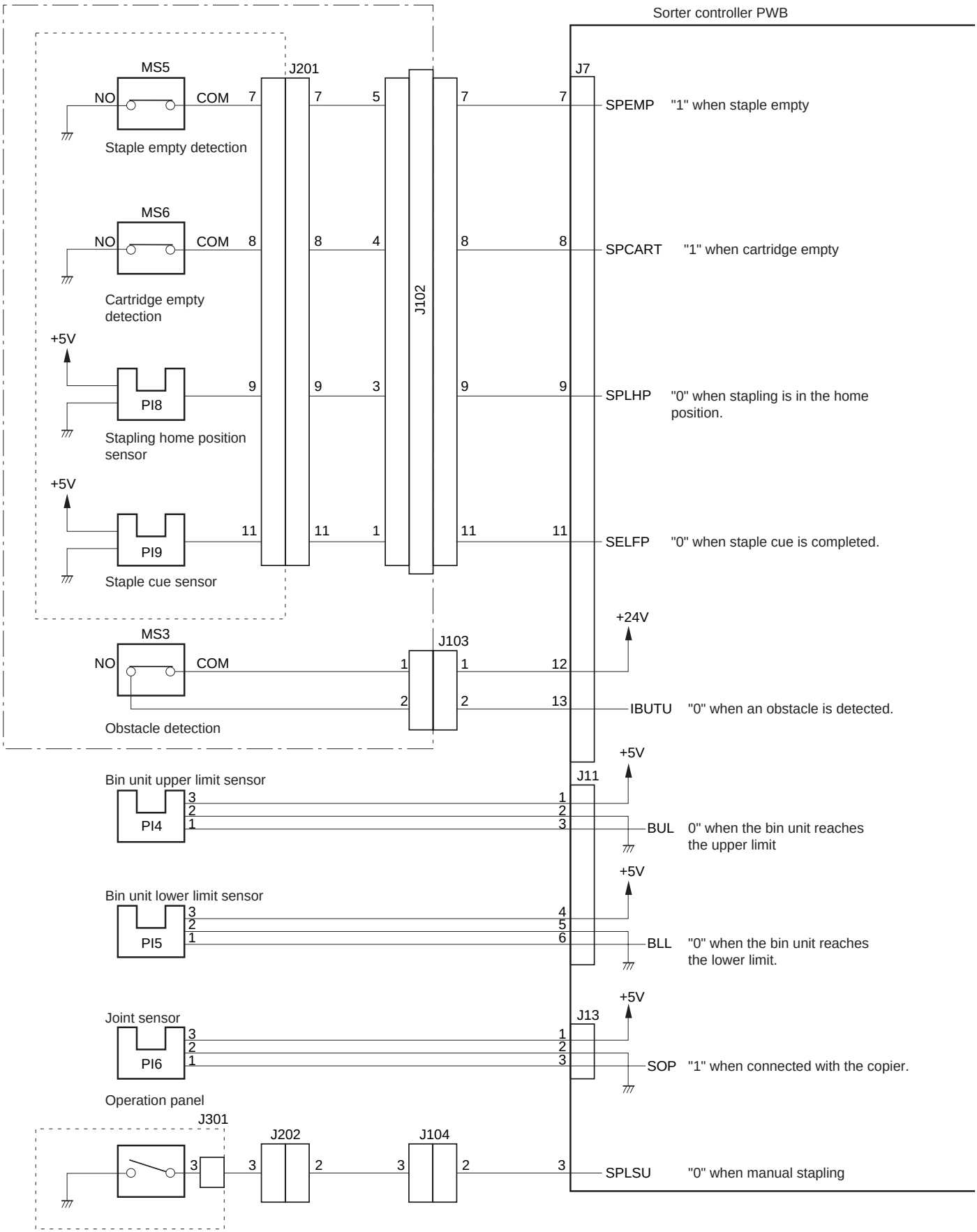


C. Tray controller input/output

Sorter controller input (1/2)



Sorter controller output (2/2)



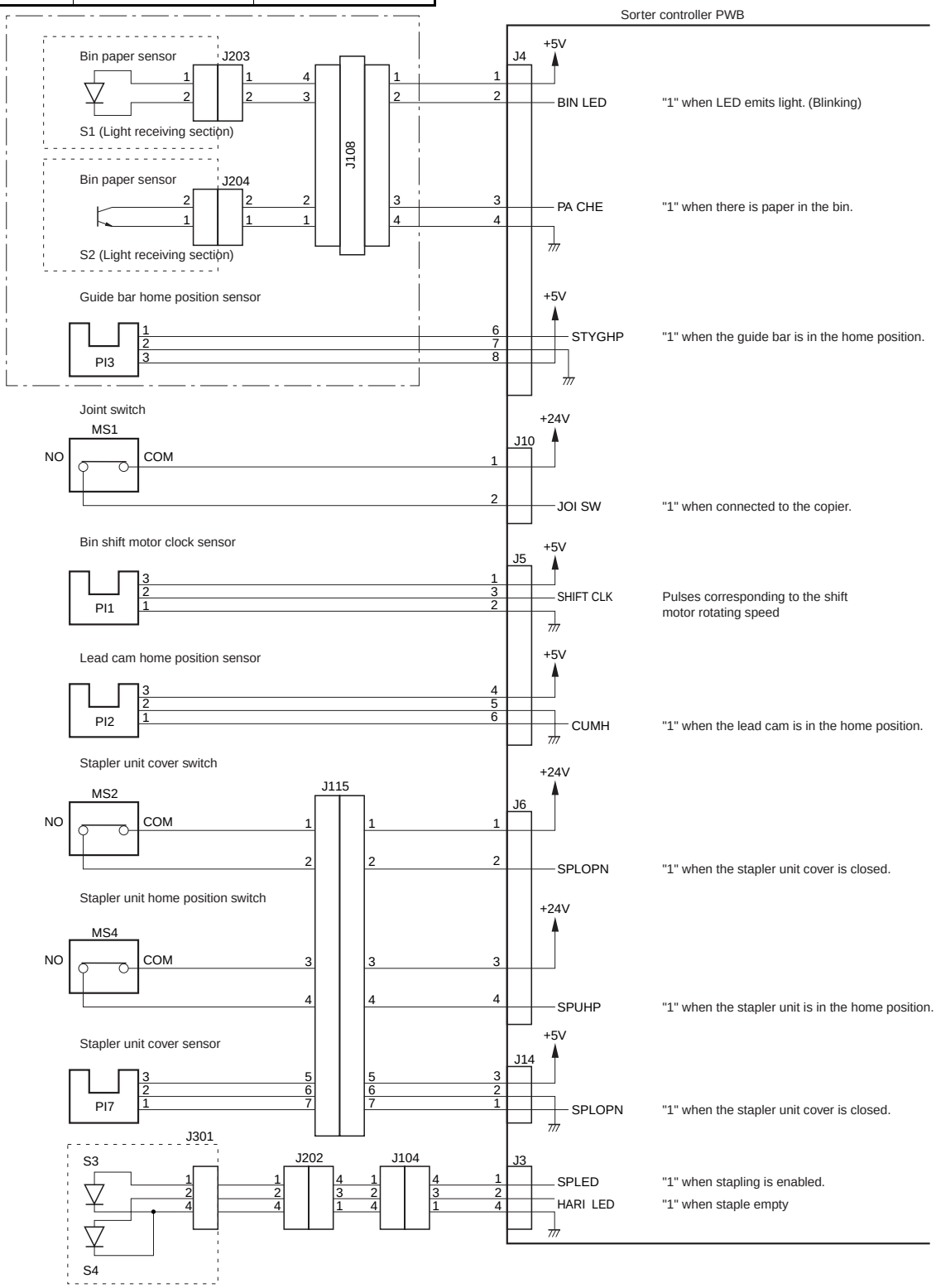
D. Copier/sorter communication

1) Outline

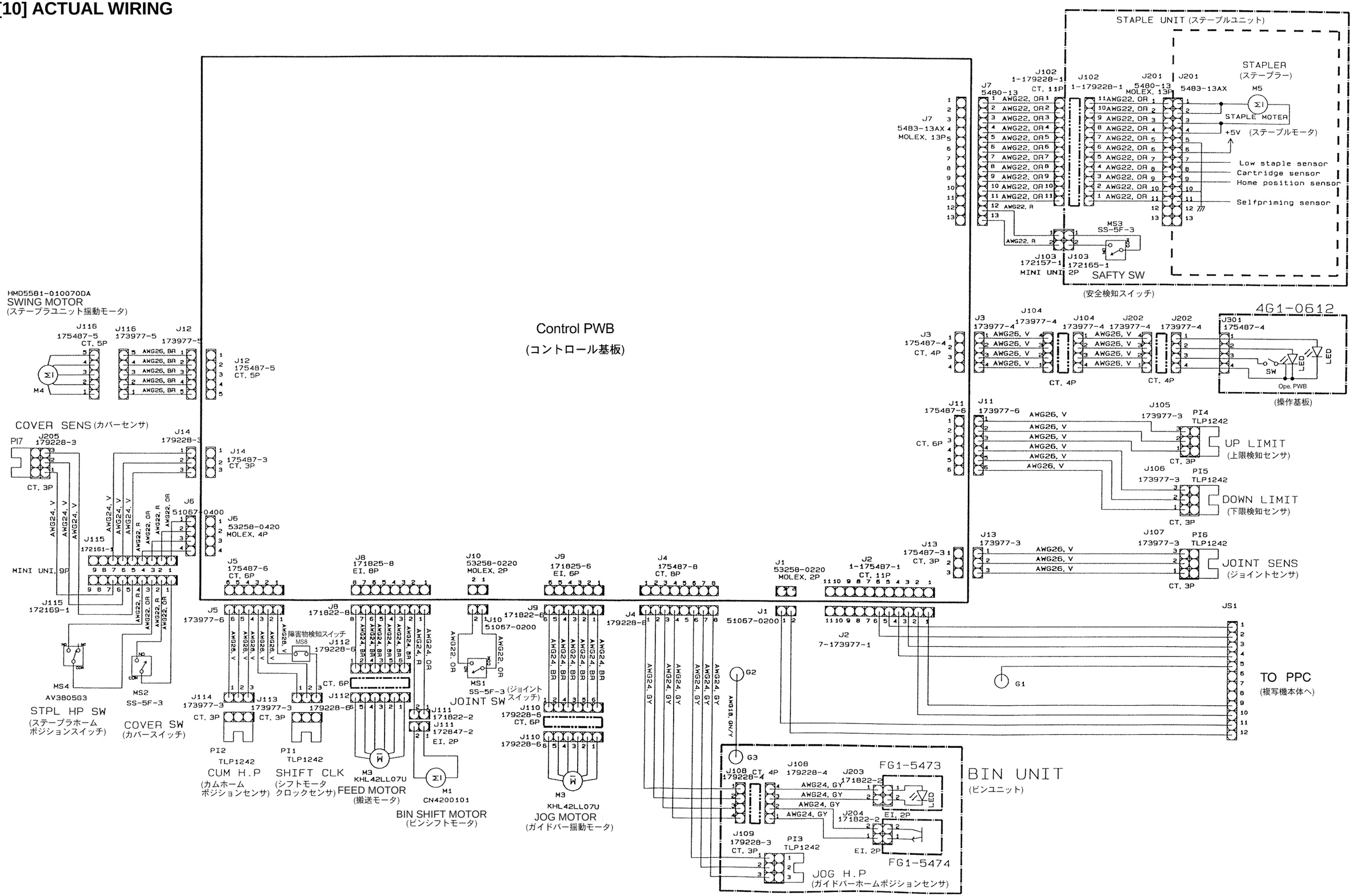
The copier and the sorter are exchanging the status signals by IPC (communication IC).
This machine is provided with a new IPC and the old IPC communication functions as well to allow selection depending on the copier connected.
Selection is made by the DIP switch (SW1) No. 6 on the sorter controller PWB.

SW1-6	ON	OFF
Communication system	Old IPC communication	New IPC communication

These signals are written into the RAM on the sorter controller PWB and outputted according to the control signal from the CPU (Q1).
A serviceman cannot check if the status signal is properly transferred or not. When, however, an error in signal transfer occurs, the self diagnostics function of the copier functions to display the error code on the operation section of the copier. (Code: F1-70)



[10] ACTUAL WIRING



SHARP PARTS GUIDE

MODEL AR-SS2

[Note]
The AR-SS2 Parts guide describes only the different points from the SF-S56. Please refer to the SF-S56 Parts guide as well.

CONTENTS

1 External covers,panels,etc.
2 Internal components 1
3 Internal components 2
4 Bin assembly
5 Mounting hardware
6 Feeder guide assembly
7 Stapler assembly
8 Entrance guide assembly
9 Stapler slide assembly ·· Refer to the SF-S56 Parts guide
10 Signal cord assembly
11 Sorter controller PWB assembly
12 Control panel PWB assembly ·· Refer to the SF-S56 Parts guide
13 Packing material & Accessories
■ Index

SHARP CORPORATION

This document has been published to be used for after sales service only.
The contents are subject to change without notice.

DEFINITION

The definition of each Rank is as follows and also noted in the list

A : Parts necessary to be stocked as High usage parts.
B : Parts necessary to be stocked as Standard usage parts.
C : Low usage parts.
D : Parts necessary for refurbish.
E : Unit parts recommended to be stocked for efficient after sales service.
Please note that the lead time for the said parts may be longer than normal parts.
S : Consumable parts.

Please note that the following parts used in Copier under the same description are classified into A or B Rank depending upon the place used.

Example: Gear made of Metal, Sprocket, Bearing, Belt made of Rubber, Spring clutch mechanism.
A Rank : The parts which may be with the revolution or loading.
B Rank : Parts similar to A Rank parts, but are not included in Rank A.

Because parts marked with "⚠" is indispensable for the machine safety maintenance and operation, it must be replaced with the parts specific to the product specification.

○ Other than this Parts Guide, please refer to documents Service Manual (including Circuit Diagram) of this model.
○ Please use the 13 digit code described in the right hand corner of front cover of the document, when you place an order.
○ For U.S. only-Use order codes provided in advertising literature. Do not order from parts department.

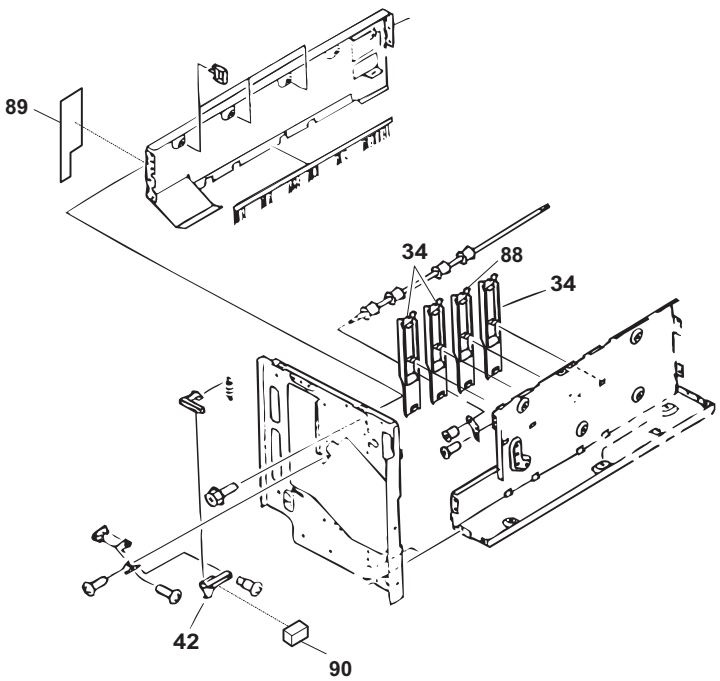
1 External covers,panels,etc.

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	0GZ4A149870000	BB	N	D	Cover,rear
3	0GZ4A149890000	AM	N	C	Latch
4	0GZ4A149900000	AS	N	C	Lever,latch
6	0GZ4F111880000	AZ	N	D	Door,front
7	0GZ4A126730000	AP	N	C	Label,stapler
8	0GZ4F111870000	BC	N	D	Cover,front

2 Internal components 1

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
28	0GZ4G111530000	CF	N	E	Soter controller PWB assembly
34	0GZ4A123610000	AH		C	Guide,feed roller
42	0GZ4A126840000	AE	N	C	Arm 1
88	0GZ4A150140000	AK	N	C	Guide,feed roller
89	0GZ4A126790000	AD	N	C	Sheet 1
90	0GZ4A126800000	AC	N	C	Paper hold cushion

2 Internal components 1



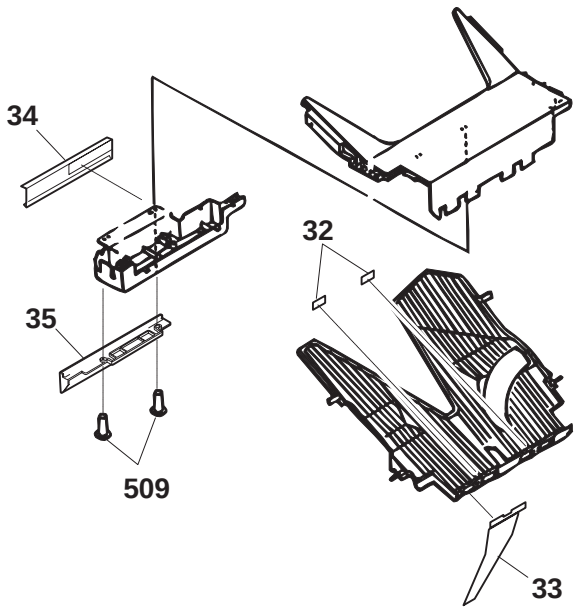
3 Internal components 2

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
6	0GZWG9001300 0	AQ		B	Bearing,ball

4 Bin assembly

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
2	0GZ4A1499100 0	AZ	N	D	Bin
3	0GZ4A1499200 0	BB	N	D	Cover,bin upper
4	0GZ4A1499300 0	BC	N	D	Cover,bin lower
5	0GZ4A1499400 0	BC	N	D	Cover,bin front
6	0GZ4A1499500 0	BF	N	D	Cover,bin rear
7	0GZ4A1499800 0	AH	N	D	Cover,bin 3 upper
8	0GZ4A1499900 0	AQ	N	C	Cover,bin 3 lower
9	0GZ4A1500000 0	AS	N	C	Cover,sensor
10	0GZ4A1500100 0	AC	N	C	Roller,bin
11	0GZ4A1500400 0	AC	N	C	Roller,dummy lower
13	0GZ4A1500500 0	AG	N	C	Arm,upper
14	0GZ4A1500800 0	AG	N	C	Arm,lower
26	0GZ4A1500200 0	AD	N	C	Roller,bin 2
32	0GZ4A1501800 0	AG	N	C	Paper stopper brush
33	0GZ4A1501700 0	AU	N	C	Curl stopper file
34	0GZ4A1501500 0	AK	N	C	Curl stopper rib 1
35	0GZ4A1501600 0	AU	N	C	Curl stopper rib 2
509	0GZXB4740140 6	AC	N	C	Screw tapping truss head (M4×14)
	(Unit)				
901	0GZ4G1340200 0	CR	N	E	Bin assembly

4 Bin assembly



FCP03710

5 Mounting hardware

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	0GZ4A1501300 0	BF	N	C	Plate,latch
4	0GZ4A1500900 0	AY	N	D	Cover,lower front
5	0GZ4A1501000 0	AY	N	D	Cover,lower rear
6	0GZ4A1501100 0	AS	N	D	Cover,lower inner front
7	0GZ4A1499000 0	AS	N	C	Cover,lower inner rear
8	0GZ4A1505400 0	AR	N	C	Screw,stepped (M5)
10	0GZ4A1260900 0	AC		C	Screw,stepped (M5)
14	0GZ4A1504400 0	BD	N	C	Plate,holding F
15	0GZ4A1504500 0	BD	N	C	Plate,holding R

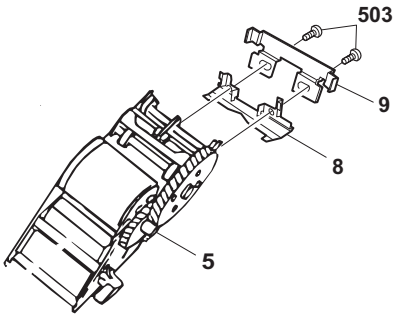
6 Feeder guide assembly

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
5	0GZ4A150006000	AZ	N	C	Guide,feeder

7 Stapler assembly

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
2	0GZ4A150007000	AP	N	C	Cover,stapler
8	0GZFB466530000	AK		C	Plate(lower)
9	0GZFB496470000	AN		C	Holding plate(lower)
503	0GZXB473007070	AB		C	Screw (M3×7)

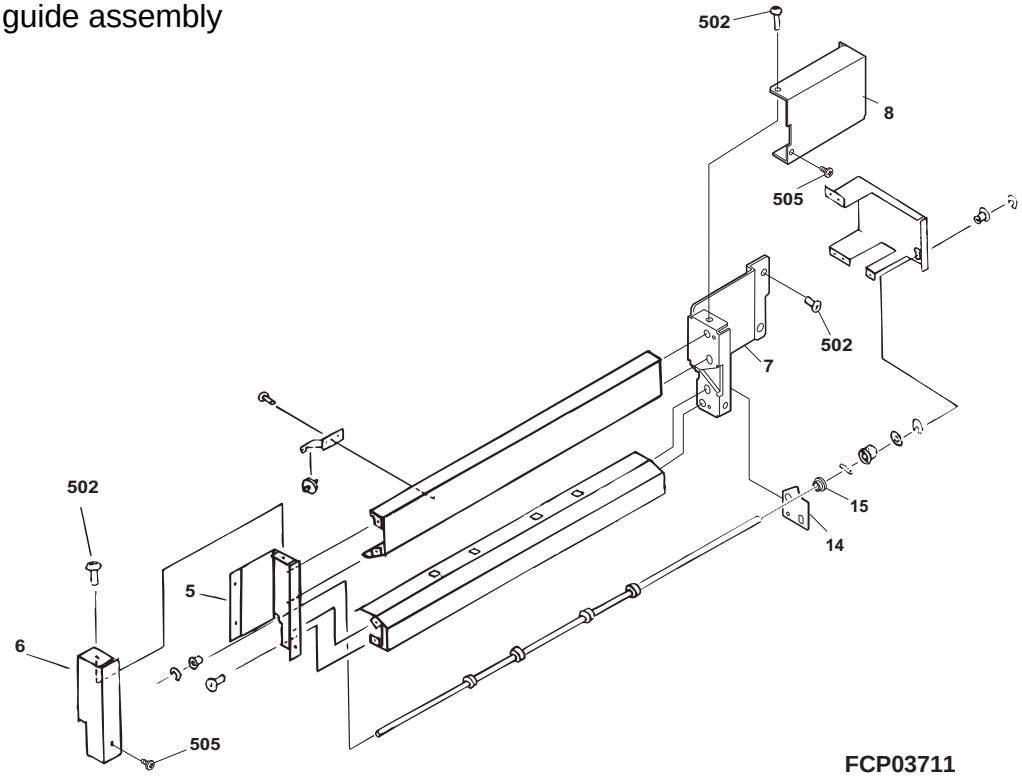
7 Stapler assembly



8 Entrance guide assembly

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
14	0GZ4A150260000	AG	N	C	Roller support plate
15	0GZFS215280000	AF	N	C	Bearing
505	LX−BZ0465FCZZ	AA		C	Screw (M4×6)

8 Entrance guide assembly

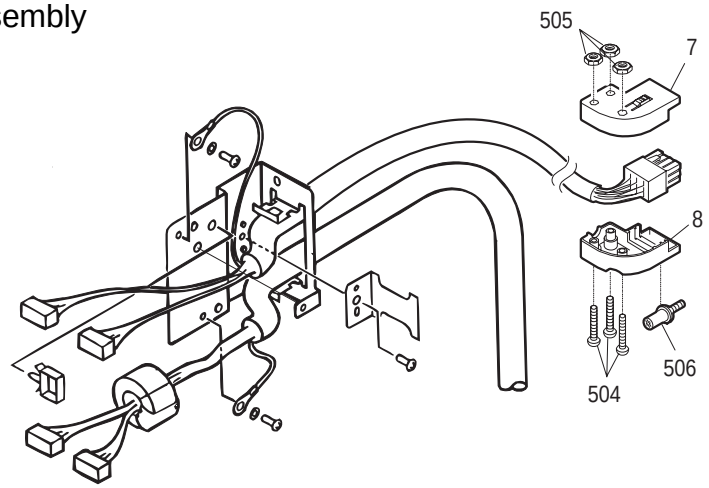


FCP03711

10 Signal cord assembly

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
7	PCÖVP1524FCZZ	AF	N	C	Connector cover CGAR1
8	PCÖVP1525FCZZ	AF	N	C	Connector cover CGAR2
504	0GZXB1230200 7	AB	N	C	Screw (M3×20)
505	XNESD30−24000	AA	N	C	Nut (M3)
506	LX−BZ0893FCZZ	AB	N	C	Screw
	(Unit)				
901	0GZ4G1115400 0	BN	N	E	Signal cord aseembly

10 Signal cord assembly



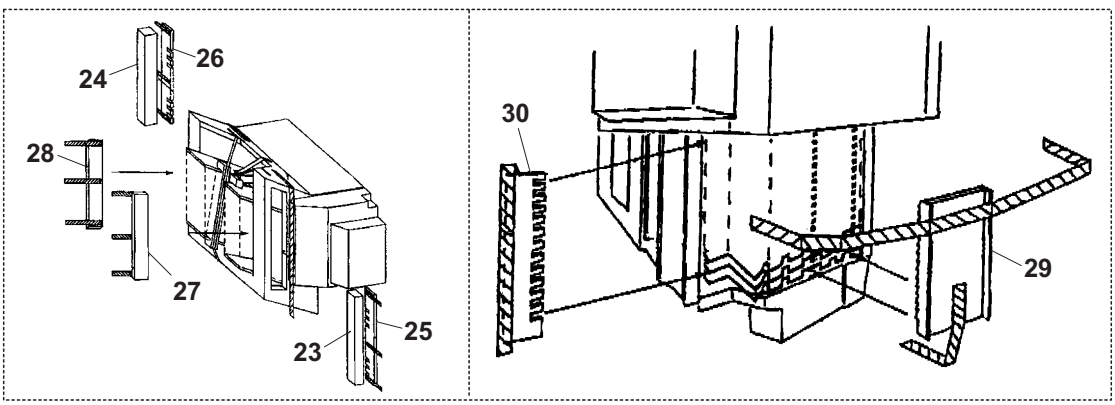
11 Sorter controller PWB assembly

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	0GZ4F1117200 0	BC	N	B	EP-ROM (M27C1001-80XF1)
	(Unit)				
901	0GZ4G1115300 0	CF	N	E	Soter controller PWB assembly

13 Packing material & Accessories

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
17	0GZ4Z1033500 0	BM	N	D	Packing case (Except Japan)
	0GZ4Z1033600 0	BM	N	D	Packing case (Japan only)
23	0GZ4Z1034600 0	AL	N	C	Bin side packing add F
24	0GZ4Z1034700 0	AL	N	C	Bin side packing add R
25	0GZ4Z5008800 0	AR	N	C	Bin side packing add 1 F
26	0GZ4Z5008900 0	AS	N	C	Bin side packing add 1 R
27	0GZ4Z5009000 0	AM	N	C	Bin side packing add 2 F
28	0GZ4Z5009100 0	AN	N	C	Bin side packing add 2 R
29	0GZ4Z5009200 0	BA	N	C	Bin side packing add 3
30	0GZ4Z5009300 0	AM	N	C	Bin Rear Packing add
101	TLABZ2957FCZZ	AB		D	Staple position label A
	TLABZ3291FCZZ	AC		D	Staple position label D

13 Packing material & Accessories



FCP03712

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PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
【L】					
LX-BZ0465FCZZ	8-505	AA		C	
LX-BZ0893FCZZ	10-506	AB	N	C	
【P】					
PCÖVP1524FCZZ	10- 7	AF	N	C	
PCÖVP1525FCZZ	10- 8	AF	N	C	
【T】					
TLABZ2957FCZZ	13-101	AB		D	
TLABZ3291FCZZ	13-101	AC		D	
【X】					
XNESD30-24000	10-505	AA	N	C	
【0】					
0GZ4A12361000	2- 34	AH		C	
0GZ4A12609000	5- 10	AC		C	
0GZ4A12673000	1- 7	AP	N	C	
0GZ4A12679000	2- 89	AD	N	C	
0GZ4A12680000	2- 90	AC	N	C	
0GZ4A12684000	2- 42	AE	N	C	
0GZ4A14987000	1- 1	BB	N	D	
0GZ4A14989000	1- 3	AM	N	C	
0GZ4A14990000	1- 4	AS	N	C	
〃	5- 7	AS	N	C	
0GZ4A14991000	4- 2	AZ	N	D	
0GZ4A14992000	4- 3	BB	N	D	
0GZ4A14993000	4- 4	BC	N	D	
0GZ4A14994000	4- 5	BC	N	D	
0GZ4A14995000	4- 6	BF	N	D	
0GZ4A14998000	4- 7	AH	N	D	
0GZ4A14999000	4- 8	AQ	N	C	
0GZ4A15000000	4- 9	AS	N	C	
0GZ4A15001000	4- 10	AC	N	C	
0GZ4A15002000	4- 26	AD	N	C	
0GZ4A15004000	4- 11	AC	N	C	
0GZ4A15005000	4- 13	AG	N	C	
0GZ4A15006000	6- 5	AZ	N	C	
0GZ4A15007000	7- 2	AP	N	C	
0GZ4A15008000	4- 14	AG	N	C	
0GZ4A15009000	5- 4	AY	N	D	
0GZ4A15010000	5- 5	AY	N	D	
0GZ4A15011000	5- 6	AS	N	D	
0GZ4A15013000	5- 1	BF	N	C	
0GZ4A15014000	2- 88	AK	N	C	
0GZ4A15015000	4- 34	AK	N	C	
0GZ4A15016000	4- 35	AU	N	C	
0GZ4A15017000	4- 33	AU	N	C	
0GZ4A15018000	4- 32	AG	N	C	
0GZ4A15026000	8- 14	AG	N	C	
0GZ4A15044000	5- 14	BD	N	C	
0GZ4A15045000	5- 15	BD	N	C	
0GZ4A15054000	5- 8	AR	N	C	
0GZ4F11172000	11- 1	BC	N	B	
0GZ4F11187000	1- 8	BC	N	D	
0GZ4F11188000	1- 6	AZ	N	D	
0GZ4G11153000	2- 28	CF	N	E	
〃	11-901	CF	N	E	
0GZ4G11154000	10-901	BN	N	E	
0GZ4G13402000	4-901	CR	N	E	
0GZ4Z10335000	13- 17	BM	N	D	
0GZ4Z10336000	13- 17	BM	N	D	
0GZ4Z10346000	13- 23	AL	N	C	
0GZ4Z10347000	13- 24	AL	N	C	
0GZ4Z50088000	13- 25	AR	N	C	
0GZ4Z50089000	13- 26	AS	N	C	
0GZ4Z50090000	13- 27	AM	N	C	
0GZ4Z50091000	13- 28	AN	N	C	
0GZ4Z50092000	13- 29	BA	N	C	
0GZ4Z50093000	13- 30	AM	N	C	
0GZFB46653000	7- 8	AK		C	
0GZFB49647000	7- 9	AN		C	
0GZFS21528000	8- 15	AF	N	C	
0GZWG90013000	3- 6	AQ		B	
0GZXB12302007	10-504	AB	N	C	
0GZXB47300707	7-503	AB		C	
0GZXB47401406	4-509	AC	N	C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	

CAUTION FOR BATTERY REPLACEMENT

(Danish) ADVARSEL !
Lithiumbatteri – Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri
af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandoren.

(English) Caution !
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type
recommended by the manufacturer.
Dispose of used batteries according to manufacturer's instructions.

(Finnish) VAROITUS
Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan
tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden
mukaisesti.

(French) ATTENTION
Il y a danger d'explosion s' il y a remplacement incorrect
de la batterie. Remplacer uniquement avec une batterie du
même type ou d'un type équivalent recommandé par
le constructeur.
Mettre au rebut les batteries usagées conformément aux
instructions du fabricant.

(Swedish) VARNING
Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent
typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens
instruktion.

SHARP

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